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ABSTRACT

Focusing on multidisciplinary aspects of college and adult reading, the 27 articles in this volume were drawn from the seventeenth annual meeting of the National Reading Conference held in 1967. Among the topics discussed in the articles are the following: psychological embarrassments of reading, rapid reading, reading rate, tutoring in a college reading laboratory, phonics skills, word association among adults at divergent levels of reading ability, reading tests, reading research, psychotherapy and learning problems, contributions of vision sciences, reading disability, ethics and the college/adult reading specialist, the cloze procedure, critical reading skills, adult reading improvement, reading improvement programs, relationships between values and reading gains, attitudes of high school content area teachers toward the teaching of reading, attitudes of adult illiterates toward reading materials and educational programs, reading comprehension, and readability formulas. (FL)

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Multidisciplinary Aspects of College-Adult Reading

SEVENTEENTH YEARBOOK OF THE NATIONAL READING CONFERENCE

Edited by
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and
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Purdue University

Publisher:
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1968

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PREFACE

The Seventeenth Yearbook of the National Reading Conference contains the papers presented at the Seventeenth Annual Meeting which took place at the University of South Florida, Tampa, Florida, on November 30-December 2, 1967.

The papers have been put together generally in the order in which they were presented at the Conference, with but two exceptions: the invitational address at the annual dinner meeting has been placed first, while the annual comprehensive summary of research in college-adult reading has been used as the final article.

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The Oscar S. Causey Award for Outstanding Achievement in College-Adult Reading

December 1, 1967

Organizations function successfully because of the unselfish and untiring service of their members. And almost every group has a *few* people whose devotion (to its causes) is outstanding.

The National Reading Conference is spotlighting two of its devoted workers for recognition this year. They are the late Oscar S. Causey, who was the Chairman of the Executive Committee in the early years of the Conference, and for whom the newly created Outstanding Achievement Award has been named. The other person being especially honored tonight is the *first recipient* of the Award—Arthur S. McDonald.

Dr. McDonald, who earned his doctorate at Cornell University, is honored by N.R.C. for his professional standards, for his wide and successful professional activities, and for his service beyond the call of duty to this organization.

He is now Director of Personnel Services, Province of Nova Scotia, Department of Education, Halifax, Nova Scotia, Canada. Formerly, he was Director of Reading Services and Professor of Education, Marquette University.

He served two terms as Treasurer and member of the Board of Directors of the National Reading Conference.

He has served as Chairman of the Citations and Awards Committee, International Reading Association, and as a member of the Board of Directors of that organization. Also, on its Editorial Advisory Committee.

He is now, or has been recently, a member of
The Editorial Advisory Board of the *Journal of Reading*
The American Educational Research Association
The Board of Directors of the North Central Reading Asso.
The American Psychological Association
American Personnel and Guidance Association
Phi Delta Kappa
Phi Beta Kappa.

Other offices he has held in educational groups include Secretary-Treasurer, Reading Research Services, and President of the Wisconsin Intermediate Reading Association.

He is the author of several books, numerous professional articles and booklets on reading, testing and guidance, and a number of reading tests.

In addition to all these posts and honors, he has been a visiting lecturer at several colleges and universities, and a consultant and speaker for many conferences, including our own National Reading Conference.

All will agree, that these "on the record" activities of our honoree are impressive. But his "off the record" jobs have been *MOST time consuming* and *valuable* to our Conference. We might name *some* of these as follows:

> He has been what might be called Comptroller of Conference, Postmaster General, Printing Supervisor, and last but not least, Director of *Vital Issues*.

Because he is devoted and conscientious, and because he deserves the honor, it gives me much pleasure to present the first Oscar S. Causey Award to Arthur S. McDonald.

Oscar S. Causey

Psychological Embarrassments of Reading

Albert J. Kingston
The University of Georgia

Many reading specialists seem to contend that their sphere of activity is firmly anchored in psychological knowledge and methodology. A superficial examination of the terminology and concepts employed, indeed lends some credence to this contention. Closer examination, however, leads one to wonder whether reading as a discipline is actually any more closely wedded to psychology than is any other area of activity that occupies the educationist.

Both modern reading and psychology undoubtedly were influenced by the educational, philosophical, and social movements of the nineteenth century. During the period between the World Wars, education, however, seems to have been largely influenced by rationalistic and Gestalt psychology. During this same period, in contrast, more psychologists appear to have espoused empirical and behavioristic approaches to the study of behavior. Thus it can be observed that while Gestalt influence waned among psychologists, reading specialists as well as other educationists, seemed to continue to explain the teaching-learning process largely on Gestalt principles.

Nor was the reading specialist apparently obligated to rely only upon Gestalt psychology. Typically he became eclectic and freely borrowed other concepts, laws, principles, or research findings to suit his various purposes. If one is to judge from the many varied and often conflicting statements made about reading, the major function of psychology today is to serve as a reservoir to be fished in whenever a particular research finding seems to fit in with reading methods, or whenever a new nomenclature is needed to label current practices.

One can only conclude that the relationship between reading and psychology at present is either that of a shotgun wedding, or even a casual liaison rather than a lawful wedding. It should be pointed out, however, that the fault was not due to the reading specialist alone. Until recently few of our most productive psychologists devoted their energies to studying reading behavior. Even today many behavioristic psychologists are reluctant to deal with covert behavior of the type necessary to understand reading. As a result we do not at present have an adequate, systematic, and carefully formulated psychology of reading. It also should be noted, moreover, that there seem to be pressures which lead able young reading specialists away from theoretical formulations. Today reading is tremendously important. Millions of school children are being taught to read. Most reading specialists seem to be continuously busy trying to teach teachers how to teach children to read and then are even busier trying to teach teachers to teach children whom other teachers have failed to teach. It also is an interesting commentary on the reading profession that prestige and financial rewards appear to be considerably less for the theorist and investigator than for the materials developer and "expert" in pedagogy.

The lack of adequate theories about reading, however, should be a continuous source of embarrassment to workers in reading. The lack of theory not only causes confusion to parents and teachers, but also makes much of the current heated debate about methods and materials meaningless. Moreover, the lack of theory tends to reduce much of the current so-called research to the level of demonstrations and action-research.

As an illustration let us examine the often cited statement that reading is a complex process. All reading specialists apparently agree that reading is a complex process. This statement is justified by listing the various word recognition skills typically taught and then by adding a list of so-called comprehension skills. Some experts with a more global view also add auditory and visual perception skills, thought processes and a few even add personal-social qualities such as motivation and life-time reading habits. Unfortunately those who seek to extend the categories only serve to cloud the issue. These experts are reminiscent of the parent whose three-year-old son asked him what a penny was. The parent, anxious to inform, answered thusly:

"The penny is a circular shaped object approximately two millimeters in diameter. It is made of copper alloy. The American penny has one side that is called 'heads' and the reverse side is called 'tails.' These two sides are mainly used in a game called flipping pennies. It has another side but this side is so small we rarely pay attention to it and it isn't even milled. The penny is also called a cent. On the head side is a bas-relief of a famous American president, Abraham Lincoln. His profile faces to the right. On the reverse side there is a bas-relief of a building with columns. This is the Lincoln Memorial in Washington, D.C. If you could read and are not hyperopic (far-sighted) you can see the phrase 'In God We Trust,' the word 'Liberty' and the date—all inscribed on one side. The other side has the words 'United States of America, one cent, and E. Pluribus Unum.' "

Having thus carefully described the coin in detail, the parent was certain he had satisfied his child's need. Unfortunately the young son still didn't realize that a penny is a coin that in today's economy has little value except for possible use as a partial payment of a sales tax.

Reading specialists are a lot like the parent in our anecdote. They have compiled many different lists of sub-skills thought to be important in reading. They have correlated reading behavior with hundreds of other facets of human behavior. They speak of the many aspects of reading behavior, to illustrate its complexity, but then ironically speak of "reading ability" as if it were a unitary characteristic.

Traditionally the psychologist speaks of "process" in contrast with "structure." A process involves a continuous series of successive but interdependent changes or events. Process, then, implies some sort of transformation taking place in time and obviously represents something that is dynamic rather than static. Presumably the reading process has to do with the manner in which the human organism perceives and apprehends graphic symbols. Taxonomies of skills add little of our understanding of this process, other than to suggest that in order to engage in the reading process, an individual must include certain abilities in his repertory of behavior. Granted certain perceptual abilities, the reading process becomes one of cognitive functioning. It would seem to follow then that reading is not a complex process. Rather the thinking process is complex.

That reading and thinking are related is not new. Yet we have not been able to separate thinking while reading from thinking as thinking. If all thought is basically identical, it should prove a boon to reading research. Again if thinking while reading differs from other patterns of cognition these differences should be demonstrated experimentally. It might be that a series of longitudinal studies of excellent readers might throw light on this problem.

Reading Pedagogy. Another source of embarrassment in reading lies in the nature of reading pedagogy and its present day record. Despite tremendous concern, mountains of materials, and great expenditures of money, it is a dismal fact that many children today fail to attain competency in reading. The reasons for the failure have been laid at the door of teachers, basal readers, the home, the pupils themselves and practically everyone and everything. Obviously an extensive treatment of the reasons why typical pedagogy fails cannot be discussed here. A better strategy perhaps would be to mention one or two points that are rarely expounded in the reading literature.

First it should be apparent that reading pedagogy has been subject to the same trends that has affected other aspects of education. Progressive education, for example, left its marks not only upon the American classroom but on reading instruction as well. Perhaps the teaching of Dewey, Kilpatrick, and others has left an emphasis which was not intended. Overconcern for the happiness of pupils, the lack of systematic, sequential daily instruction, puerile vocabulary control, lack of drill and repetition may have resulted from this movement. Learning to read is hard. Reading, like other types of learning, requires activity on the part of the learner. Sitting in a little group around a teacher may be pleasant but does not ensure the active participation required for learning.

It should be noted that all learning theorists stress the importance of reinforcement in learning. Basal readers presumably provide for reinforcement by repeating words throughout the prose materials. Apparently this procedure is inadequate for many children. More attention must be directed toward developing different schedules of reinforcement to meet individual needs.

Two other embarrassments should be mentioned. Developmental reading methods stress the word as the basic conveyor of meaning in language. Thus vocabulary typically represents a major source of control. The control of vocabulary probably limits the speed with which bright children acquire reading skills as much as it facilitates the reading of less able children. Another problem, it seems to me, lies in the underlying implications of teaching word recognition skills. Presumably the most efficient technique is to recognize a word instantaneously. This is called sight vocabulary. When a word is not part of one's sight vocabulary, one should use configurative clues, phonics, or structural analysis. When these techniques do not work the reader is urged to examine the surrounding words in which the unfamiliar word is embedded. This technique is called using context clues and presumably serves to narrow the probabilities of correctly guessing the unknown word. The procedure makes use of the redundancy of our language and presumes that such techniques are well formulated and can be readily taught.

A major weakness in teaching word recognition sequences is the variable cognitive styles developed by humans during the pre-school years. Even first-grade children seem to have developed individual methods of coping with problems and tackling new tasks. It is unlikely that many readers employ the classical sequence of word-recognition skills. By contrast there is evidence that indicates that many good readers simply skip the unknown word and continue their reading. Because they are bright and English is highly redundant they usually can supply the correct answers to simple comprehension checks of the recognition-type multiple-choice question.

It also might be pointed out that although reading instruction at the beginning stages emphasizes word-recognition skills, by the intermediate grades the reader is exhorted to read "thought-units" not words. What thought-units are is not clear!

Reading Research. Because of its importance, reading has been lavished with funds for research purposes. It should be embarrassing that after such expenditures so little has emerged in the way of theories about reading or knowledge about how it is learned. We now know, if we didn't suspect it before, that teachers are significant variables in the classroom, that some children will learn to read regardless of the methods used and that some do not. Most of the funds spent seem to have been spent on what Stanley has called pseudo-experiments. The so-called "first-grade studies" are a case in point. The problems of studying reading behavior in a school setting with intact class-size groups are overwhelming. The one amazing question is why we continue to pursue such fruitless paths. In most of the studies reported in the literature it is impossible to even differentiate the major differences between the materials being studied. Typically they are not so different as day and night, but rather share many common features. Similarly we have meager knowledge of the other daily experiences shared by children during the day. Hopefully the child is exposed to reading during the entire school day. Finally most of us would rather have our own children taught by a master teacher using old-fashioned materials rather than a poor teacher with the latest curriculum. In most reported studies such an important concept as the Hawthorne effect seems to have been [illegible]ored.

Science has had its greatest impetus from [illegible]e discovery of principles that apply to a limited range of events. The future of reading research lies in the intensive study of limited segments of reading behavior. We are more apt to learn about how the human reads or learns to read when researchers experiment with one or two children under carefully controlled laboratory conditions. The goal will not be to solve all the problems about reading but to discover merely one or two principles at a time. Next the studies must be replicated with new subjects.

Reading Pretensions. A final source of embarrassment lies in the failure of the reading specialist to face up to his own limited knowledge. Reams of paper are consumed by writers offering prescriptions for reading instruction. Avalanches of material for classroom use are produced annually. And correlational studies still are reported *ad nauseum.* Reading teachers still feel they can teach children to become critical readers by selecting a few passages for pupils to criticize. If the child dares to criticize his other texts, he is reprimanded. He only may criticize where and when he is told to. The modern reading specialist also vows he will make all children develop life-time reading habits. What exactly good life-time reading habits are is never explained. As with much in reading there are no operational definitions. If the reading teacher is asked what are the criteria for judging life-time reading, the answer will be delightfully vague. Does the truck driver who reads a comic while waiting at the loading dock have the habit? Does a clerk who takes a magazine to the bathroom? Does it mean looking at the sports page daily? Are there quality as well as quantity factors? I must confess to small feelings of guilt when I hear some of my colleagues talk. I read constantly, but mostly professional works, popular magazines, newspapers, and "who-done-its." I rarely read the classics I was exposed to in school and college.

Reading specailists must explicate their thinking, produce more meaningful research, and be content to build a discipline that is more empirically based and less grand and pretentious.

Can Fifth-Grade Pupils Benefit from an Adult Rapid Reading Method?

Florence Schale
Northwestern University

The logical time to stress rapid silent reading and skimming is in the fifth grade. At this point the average child has developed sufficiently his word-recognition abilities. He is now "on his own in reading."

For at least seventy years there has been dialogue and some limited research on how to increase rates of silent reading in the elementary levels (3). Since Buswell's (1) studies in the 1930's, however, the emphasis on rapid reading has shifted to the upper academic levels. This, no doubt, is due to the intense "knowledge explosion" which is bringing college and adult students into reading improvement courses. It only seems natural that many students ask why they were not taught to read and skim much faster in the earlier years.

Theoretically, a fifth-grade child can be taught to read faster than word-for-word on materials, providing that the level of difficulty is one or more levels below his instructional level. This has not been the case. According to Gray & Reese (2) the average fifth-grade pupil reads about 180 words per minute, a rate much lower than the usual 250 wpm word-for-word speed. Teachers traditionally have emphasized deeper and more critical analyses of more complex reading texts. This, of course, is essential and proper in the development of pupils' abilities to read. But, while the child learns to develop phases of his vocabulary and comprehension, his rates of reading should not continue to be relatively ignored.

This fall, therefore, a pilot rapid reading study was conducted to determine whether fifth-grade pupils could increase their rates of reading without significant loss of comprehension when using an adult rapid reading method. More specifically, it was tentatively hypothesized that fifth-grade pupils who have demonstrated average reading ability would at least double their reading rates while using the 2R (Reinforced Reading) method with fifth-grade materials.

PROCEDURE OF THE STUDY

In order to achieve the purpose of the pilot study, four steps were taken: selecting the subjects, combining an appropriate method with materials for instruction, administering pre and posttests, and analyzing the data.

Selection of the Subjects. The fifteen subjects of the pilot study were selected from several fifth-grade classrooms in McHenry, Illinois, a village sixty miles northwest of Chicago. They were considered representative of a culturally stable neighborhood of middle-class socioeconomic background. Nine boys and six girls were selected on the basis of fifth-grade equivalent reading scores on the *California Reading Test,* Elementary Level.

Method and Materials. The 2R (Reinforced Reading) Method (5) based on psychological principles of reinforcement and transfer was adapted for fifth-grade pupils. The seven steps of the Reinforced Reading "Or Alert" Method are as follows:

O-verview (Read first and last paragraphs. Guess about the story)

R-ead at predetermined rate (e.g.) (250 words per minute)

A-nswer questions (70% comprehension is adequate, but 80% is desired)

L-ocate mistakes by going back to look within the story

E-xamine causes of mistakes

R-eread story at same rate (250 wpm)

T-ransfer mastery of story at 250 wpm to next article

Combined with the 2R Method were sixteen O. Henry type stories written by John A. Hurst, children's author.

The first day the subjects read two third-grade level of difficulty (Flesch Readability Scale) stories on the Shadowscope (Psychotechnics, Inc.) and SRA reading pacers. They also read in class and took home for practice 6 fourth, 6 fifth, and 2 sixth-grade stories. They were to begin reading easy materials and stretch up to the sixth-grade level before taking the posttest. Ten questions followed each story; most were multiple choices. The literal and critical levels of comprehension were evaluated.

Administration of the Tests. Pre and posttests of fifth-grade reading level of difficulty were to be administered at the beginning and end of a five week duration. The subjects met for a 50 minute period once a week. At the final meeting, the posttest (which was prepared under the direction of the author) contained unfamiliar French terms; therefore, the writer substituted an available sixth-grade posttest.

Analysis of the Data. The data was analyzed with simple descriptive techniques. A gross gain in words per minute and per cent of gain was computed to measure increase in rate of reading. A gross gain and per cent of gain also was used to measure comprehension.

SUMMARY OF THE FINDINGS

As a preliminary evaluation of the adapted 2R Method and the Hurst stories, the writer compared the results of the pre and posttests in Table I.

TABLE I

Results of 2R Method of Speeding Comprehension on Hurst Stories

(N=15)

	Pretest 5th Grade Level	Posttest 6th Grade Level	Gross Gain	Per Cent Gain
Mean reading rate (in words per minute)	157	622	465	296.2
Mean per cent of comprehension	72.8	69.0	–03.8	–05.5

Considering the difficulty of the posttest (6th grade level) compared with the pretest (5th grade level), the results indeed show improvement. The subjects are reading harder material almost four times faster than initially with an insignificant loss of comprehension.

CONCLUSIONS, LIMITATIONS, AND IMPLICATIONS

Substantiated by the findings, the tentative hypothesis is upheld. The fifth-grade pupils did at least double their rates of reading without significant loss of comprehension while reading at least fifth-grade stories and using an adult rapid reading method.

Since this was a pilot study, however, there are some obvious limitations, such as:

1) the subjects met only once a week with no follow-up on the 2R method by their classroom teachers
2) as invaluable as was the help of the parents, the degree and help was not measurable
3) the stories and tests were being field tested and did need some adjusting
4) there was no introduction to possible "stumble words" on stories prior to the pre and posttesting.

In spite of the above limitations or handicaps, the results of the pilot study were surprisingly good. Certainly this study suggests that more work in improving rates of reading at the intermediate and above levels needs to be done. Further exploration into adapting the newer theories and pedagogy found at the college and adult reading levels undoubtedly will prove valuable to elementary school teachers.

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Rapid Reading: Problems, Parameters, and Prospects (R2-3P)

Dayton D. Hultgren
University of Minnesota

Stanley Soles, in the *Phi Delta Kappan* (13), discussed at some length the educational quackery that is emerging external to our schools. It is still not clear whether many of these enterprises are legitimate quasi-educational enterprises or whether they are charlatan operations designed to exploit the public and our school staffs. It is clear that we in the reading field are especially susceptible to their exploitations, on the one hand, while we engage in our own bit of quackery, on the other.

This is most evident in the area of reading improvement, where newspaper and magazine ads, brochures, radio and television spot announcements, and, for that matter, full-page spreads in some of our own professional journals, are geared to sell our services and products to a not-too-discriminating public.

The comedian-actor, Woody Allen, bears testimony to the apparent success of these efforts when he reportedly said: "I took a course in speed reading, learning to read straight down the middle of the page, and I was able to go through *War and Peace* in twenty minutes. It's about Russia!"

Specifically, in this area of so-called rapid reading, we tend to exhibit a strange penchant for mixing science and superstition, fact and fancy. What do we know about the improvement of reading behavior? How serious are we in developing a systematic body of scientific knowledge about that which we commonly call rapid reading? It is apparent that much of the current confusion and conflict in the literature emanates from this phrase: ". . . that which we commonly call rapid reading." How is the word "reading" used in our profession? In reference to the subject under consideration here today?

At the 1964 annual meeting of the National Reading Conference the following definition, representative of those in the literature, was given: "Gaining meaning from the printed page at a rate of 1,200 or more words per minute." (12) The author further indicated that he placed no upper limits on the rate.

A careful examination of this definition leads to two observations which are worth exploring here today.

The *first observation* pertains to the adequacy of comprehension as "the only real and meaningful gauge" of reading competence at the high rates of coverage.

If one seriously attempts to assess the quality of reading, it seems clear that comprehension gets at only one facet of the problem: *effectiveness*, or the ability to understand and to satisfactorily complete an assigned reading task. There seems to be little disagreement that comprehension measures can be used to assess effectiveness. But there is a second facet of quality reading which is not dealt with by comprehension measures: *efficiency*, or the nature of the perceptual activity employed by the reader while carrying out the reading act (18). This dimension demands equal consideration. And in order to explore this dimension of assessment it is necessary to admit the legitimacy and relevance of eye-movement research. Excellent histories of the development of this technique are found in the works by Huey (8), Carmichael and Dearborn (2), and Taylor (18). For that matter, the question of the reliability and validity of eye-movement records obtained by the photographic method has been thoroughly investigated and substantiated by Anderson (1), Morse (10), Tinker (20), Gilbert (5), and Dixon (3).

Also, those who insist that comprehension, or effectiveness, is the sole meaningful measure of reading competence are faced with the necessity of explaining the following research findings. Spache (15) recorded the eye movements of students before and after training in a well-known speed reading program. Using the Reading Eye, records were obtained on the act of reading one of the test selections supplied for use with the camera and on the act of skimming the pages of a book. Comprehension checks by true-false questions accompanied both types of reading. He found that comprehension in the test selections was normal (70% or better) before and after training, with an average gain of less than 5%; and that comprehension in skimming was weak, averaging about 50% after training. Taylor (17) found in his evaluation of the trainees who completed a well-known speed reading course that the slowest readers had the best comprehension and those who truly read "dynamically" (that is, down the center of the page with no left-to-right eye movements) had comprehension scores on a true-false test of less than 50%, less than that which could be attained by a blindfolded monkey with a pencil.

Therefore, it is essential to discuss the quality of reading, rapid or otherwise, from the standpoint of efficiency as well as effectiveness. The alternative is to be caught up in a sea of semantic confusion and professional embarrassment.

A *second observation* has to do with the suggestion that all reading is really of the same type, except for variations in rate.

To check the validity of this assumption it is necessary to review some all-too-familiar facts.

There is the age-old discussion of whether or not it is necessary to see all the words one is reading. While it must be conceded that some words are more important carriers of meaning than others, how is it possible in advance or apart from the reader's making contact with the printed words, to select out the important words which are to receive his attention in reading? It must further be recognized that a reader's vision is so reduced while his eyes are in motion that it is impossible for recognition in any meaningful sense to occur. He can absorb print only when his eyes are stopped."

What about visual acuity and span of recognition? As a reader's eyes stop at any given point along a line of print, only 4-5 letters immediately around the fixation point are seen with 100% acuity. From this point of clearest vision outward in either direction words and their letters are seen with decreasing clarity, so that words which occur one inch from the fixation point are seen with only 30% acuity (15) (18). This typical fall-off of visual acuity leads to the conclusion that the usable span of recognition of readers is only about 1.1 words and explains why even the most superior readers, trained or untrained, seldom achieve a useable span of recognition of over 2.5 words (6).

If reading is interpreted to mean "reading most of the words on a page," the time is also a significant factor in reading. There is ample evidence to suggest than any other definition is not very helpful (15) (22) (5) (21). The sheer mathematics of the situation (1/5 second duration per fixation; 1/25 second per sweep to the next fixation; acuity of 2.5-3 words per fixation; and 1/25 second for a return sweep to the next line) reveals that it is impossible to read more than about 800 words per minute.

There is one interesting finding reported by Dixon (3) in his study of eye movements of forty-eight University of Michigan professors, individuals who had chosen scholarship as a career and who should be among the best readers. Actually, the subjects in this study didn't read as skillfully as might be supposed. The average rate on all passages read was 303 words per minute with 6.5 fixations per line. Only five subjects were found to have read at least 500 words per minute. Of the five, only one subject maintained a speed of 500 words per minute on all passages. That one subject happened to be an individual who had the reputation of being able to read a line or a paragraph at a glance, in "gulps and chunks." An analysis of his records revealed no evidence of single eye-fixations per line or paragraph. This super-speed reader was invited for further testing, involving materials ranging in difficulty from the primary to the college level without formal comprehension checks, to remove suspicion that the earlier materials were too difficult and the comprehension checks hampered his speed. Again, there was no evidence of single fixations per line or paragraph and the fastest rate achieved on the supplementary tests did not exceed 600 words per minute. Dixon concludes "it seems clear that this subject read in the conventional manner, in that he makes several fixations per line as well as occasional regressions." No evidence was found to support the contention that there are individuals who are able to read in single fixations per line or paragraph.

If all reading behavior is not similar at all rates, what is the so-called reader doing when he goes through a book so rapidly he never stops turning the pages? The subjects in Dixon's study (3) did not actually exhibit any such reading behavior. The subjects in studies by Grayum (7), McDonald (9), and Taylor (17) were found to employ distinctly different approaches or performances (fewer fixations of increased duration, random and unpredictable visual survey behavior) in carrying out tasks at rates ordinarily associated with rapid reading. One can conclude that they are not really reading, but rather are engaging in a masterful form of skimming. Unless the material is extremely familiar, the individual cannot stand much of a test on the material.

This discussion of these observations leads to the pondering of the following questions:

1. How do we account for the fact of hard research evidence which places specific physiological limits on reading behavior?
2. What good is it all, even if you could get people to involve themselves in a process called rapid reading, when comprehension drops off as a result?
3. How able are we to demand hard research to support what we say and do in the so-called speed reading area?
4. How willing are we, professionally, to live within the limits of those research findings?

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Controversial Issues Pertaining to Reading Rate

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CLAIMS AND ISSUES

A major controversial issue pertaining to reading rate involves the claims made by the proponents of the different methods and programs. For nearly a decade now reading specialists have been arguing sporadically, but steadily. In the November, 1960 issue of *The Reading Teacher,* Stauffer (44) referred to the Wood Reading Dynamics Method as "a magnificent ambition." About a year later, Spache (43) citing Stauffer's phrase, questioned the veracity of the claims of the Reading Dynamics Program. Spache, in turn, was criticized by Stevens and Orem (46), who, in their article, pointed to the preliminary results of the research on the Reading Dynamics Method then being conducted under the aegis of Stauffer. (45) Three years later, this fledgling research emerged as a doctoral dissertation in which Liddle found that students taught the Wood method increased their reading rate but "an analysis of the data . . . does not substantiate the claim that exceptional rates are obtained without a loss in comprehension." (25) Similar findings were obtained by Taylor. (50) Additional views on aspects of the Wood Method are presented by Wheeler and Wheeler (57), Schale (42), and Berger (7). McBride (27, 28, 29), and Adams (1) also cite extraordinary speeds using books.

Berger (4) investigated the effectiveness of four methods of increasing reading rate, comprehension, and flexibility. These four methods were referred to as tachistoscopic, controlled reader, controlled pacing, and paperback scanning. Findings indicated that while each method significantly increased reading rate the comprehension level remained the same. Data also indicated that the paperback scanning method was significantly superior to the other methods in increasing rate. Flexibility was increased, at the .01 level, by three of the four methods. Results were retained when checked eight weeks later. Somewhat similar results were obtained by Hooprich and Anderson (22).

Machines versus Non-Machines

Related to the controversial issue of claims is the issue involving the value of machines in increasing rate. In regard to the tachistoscope, Gilbert (16) found a "substantial correlation between the length of the fixation pauses students use in reading simple prose material and the speed with which the students can process tachistoscopically-presented stimuli resulting from simple phrases." Buswell (12), however, found only a .06 correlation between reading rate and a perceptual test involving the tachistoscope. Sutherland (48) found that "the group that had previous training in perceptual span made faster initial progress in improvement in rate than a comparable group that had not had training in perceptual span." However, Weber (54) found no significant differences in speed or comprehension between one group using the tachistoscope and another using textbooks.

Like the relatively few studies that have attempted to control the effects of the tachistoscope, the studies that have attempted to determine the effects of controlled pacing devices have yielded conflicting results. In separate studies, Taylor (49) and Wedeen (55) have reported rate increases with controlled pacing devices. However, the population samples using these devices in the studies of Thompson (51), Barry and Smith (2) did more poorly than groups using other methods. No significant difference in results from different methods was the conclusion reached in the investigations of Cason (14) and Glock (18).

Following an investigation of the relevant literature, Tinker (52) suggests that training with the tachistoscope is of questionable value in increasing reading rate, although he observes that such training may produce other desirable effects, such as improved visual discrimination, greater attention, and heightened motivation. He also questions the value of controlled pacing devices, noting that they are "no more effective in increasing rate of reading than are less complicated but sound classroom procedures." He points out that these machines are often expensive, "their use becomes a ritual and tends to overemphasize the mechanical aspects of reading to the sacrifice of proper attention to the more important processes of comprehension and thinking," and there is usually little transfer to natural reading situations.

A recent comprehensive review of mechanical devices for increasing speed of reading was made by Rosen. (41)

Level of Research

Another controversial issue, adding to the confusion, is the state of the research on reading rate. Most of what is called research is merely a description rather than an experiment. Even in experimental research involving machines, most studies report the use of a combined methods approach; consequently, the problem of ascertaining how much each method contributed to the results is, of course, a weakness in these studies. Berger's (5) selected review of studies on the effectiveness of various methods of increasing reading efficiency, which covers a forty-year period, reveals weaknesses sufficient to make one cautious in interpreting the results of many of these studies. The major weaknesses include lack of a pilot study and lack of adequate control groups. Other weaknesses include those cited by Davis (15) and Bliesmer (8). Additional references to studies involving various facets of rate, are contained in the annotated bibliography on speed reading published by the International Reading Association (6).

Measurement

Related to the issue of research is that of measurement. "The measurement of rate of work in reading for various purposes poses many difficult problems," Davis (15) points out. "Number of words per minute is, in itself, a meaningless score. To be meaningful, it must be associated with a score indicating the extent of comprehension that has been attained." Braam (9) has suggested the possibility of multiplying rate and comprehension to obtain an effective rate.

The author recently examined approximately twenty-five tests which claim to test rate, comprehension and/or flexibility. He sought a test composed of short passages and a test composed of a long passage to allow the reader to perform on these different kinds of measures. He found that most of the tests either had no or low validity or reliability data. Tests found to be most reliable included the *Van Wagenen Rate of Comprehension Test* (53), the *Robinson-Hall Reading Test of History* (Forms Canada and Russia) (40), the *Braam-Sheldon Flexibility of Reading Test* (10), and the *Nelson-Denny Reading Test* (35).

An additional problem is the interpretation of test results. For example, on a test used by the author during his doctoral investigation there was a significant increase for one group at the .01 level of confidence. However, the actual mean gain was only 25 words a minute. Hence the question: (23) Is it ethical to take six weeks of student and instructor time to achieve an increase of only 25 words a minute—even though this increase is statistically significant?

The issue of measurement of reading rate is far from resolved, and various other ways have been proposed. Rankin (37) recommends the residual gain method of measuring rate: others recommend counting syllables rather than words per minute.

Reading Rate

Casting a shadow over all these issues is the still unresolved problem of providing a definition of rate, or speed, of reading that is acceptable to all concerned. Tinker (52) claims that the "only justifiable or valid definition of 'speed of reading' is 'speed of comprehension,'" and his test is based on his definition. In his discussion, Spache (43) defines reading as "the act of reading most of the words on the page." Taylor (50) suggests the use of WDPM—words dealt with per minute. Pauk (24) has observed that "the people who deal in selling these thousands-of-words-per-minute rates would do the field of reading a favor if they would coin another word, because what they are doing is *not* reading in the traditional sense."

ADDITIONAL QUESTIONS

In addition to the questions implicit or stated in the preceding discussion of claims and controversial issues are the following. (In parentheses are references for additional information.)

1. Little is known about individual performances within methods. Do certain individuals, for instance, make significant mean increases within methods that show no mean increase? If so, might personality interaction with method account for this anomaly? Further investigation of personality interaction with instructional methods is needed. (Heflin (20) and Mueller (34))

2. An investigation of the time variables in reading rate instruction is also needed. For how many weeks should instruction in reading rate be continued? How often should sessions be held during these weeks? How long should each session be? What interaction might there be between individual differences and various facets of the time variable?

3. In a program designed to increase rates, can comprehension skills be developed although not directly emphasized? That is, if the exercises following the reading of passages are more related to the development of specific comprehension skills, such as main idea, or details, or inferences, might the level of comprehension related to one or more of these specific skills be changed?

4. The precise contributions which each program or method makes merits investigation. In addition to increasing reading rate, what other skills are developed by the various group and individual methods? Do one or more of these methods, for example, produce increases in vocabulary, or organization skills?

5. What happens to the gains in rate after one year? Two years? Three years? (Ray (38))

6. When should instruction in reading rate begin? (McCracken (30))

7. Should reading rate instruction be for everyone? (Bryant (11))

8. How can improvement in reading rate be predicted? (Stroud (47) and Glass (17))

9. What should be done with comprehension? Rankin (36), Holmes (21) With flexibility? (Carrillo (13), McDonald (31) (32) (33), Berg (3), Weintraub (56), Harris (19), and Maxwell (26)).

10. How might operant conditioning serve to increase reading rate? (Raygor, *et al.* (39))

The answers to these questions and to those yet unasked will no doubt result in additional controversies. As has happened in other fields, the answers will clear some of the present confusion but will reveal additional problems at the moment unknown. Such is the mystery of reading rate—seemingly so simple and yet so elusive.

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Tutoring: An Aspect of Clinical Procedures in a College Reading Laboratory

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During the past three decades much has been written on the general subject of tutorials and tutoring ranging from information concerning the well-achieving pint-sized tutors, children who aid others at the elementary level, to pre-professional tutors at the all-school and college levels, and out into the world of the "Each One Teach One" Laubach Literacy Levels.

No doubt the layman as well as the professional has read with increasing gratitude and interest about student tutors at the high school and lower levels, and of the hundreds of tutoring programs organized and operated by more than a hundred thousand college and university students for the purpose of giving free aid to pupils at all levels who need extra attention in improving their work, and improving the pupils' self-image by establishing a one-to-one relationship between a specific tutor and a specific pupil in study situations. (19) Outstanding examples of these organized tutoring programs are found at Washington University (St. Louis), the University of Chicago (SWAP and STEP), Oberlin College, CCNY, Michigan State University, the University of Illinois, Harvard, Yale, Rhode Island, the University of California at Los Angeles, Stanford, and New York University, to name only a few. The number of students being helped through these programs is amazing.

The purpose of this paper, however, is to discuss the matter of tutoring as an aspect of clinical procedures in a College Reading Laboratory. A few of the respondents to the writer's brief questionnaire on tutoring asked, "How are you defining the word tutoring?" Tutoring, as used in the context of this paper, is the act of providing special instruction to individual students or to small groups of students in a College Reading Laboratory to assist them in obtaining skills necessary to progress in their academic work in the regular classroom at all educational levels.

A tutor may be a professional member of the instructional staff of the Reading Center, Laboratory, or Clinic, an undergraduate senior, or a graduate student selected and recommended by professors of reading to assist individual or small groups of students by means of private conferences and work sessions. A tutee, of course, is the individual being tutored in the College Reading Laboratory at any educational level. Frequently, he is in real need of help academically, psychologically, or both. (1)

Historically, Grace Fernald is credited as having developed the first University Reading Clinic at UCLA. It is felt, however, that this and other early clinics no doubt had their roots in the first Psychological Laboratory founded by William James in 1875 (g) or the first Child Clinic founded at Philadelphia in 1896 by Lightner Witmer who had as his first case a 14-year old male subject labeled as a bad speller by his teacher. After careful physical and mental examinations were made, it was discovered that the subject's difficulty was due to defective vision. Following subsequent corrections, the spelling problem was alleviated. Witmer's continued clinical procedure of studying and treating individual children provided a firm foundation to the establishment of the Witmer Clinic, reputed to be still in operation. (5)

By 1912 there were forty such psychological laboratories or clinics in this country, and they continued to develop in colleges and universities at an ever increasing rate.

In 1935 William S. Gray (7) lauded the work being done in Reading Clinics by Baker and Leland in Detroit, Emmett Betts in Shaker Heights, and Paul Witty at Northwestern University. In 1952 the idea of tutoring was initiated at Brooklyn College by Carl Washburne and his associates by having each student in "Methods of Teaching Reading in Elementary School" tutor one pupil who was reading below grade level. Although this tutoring was done in the pupil's school rather than in the College Reading Clinic, there is some evidence of that practice being followed today. For example, during the past year (1966-67) at the University of Oklahoma, a few students who lived in neighboring cities were permitted to tutor a student in their home towns during the first semester. The tutees, however, were regularly enrolled through the Reading Clinic as all others.

Through the years—since the earliest clinics to the present, astounding advancements have continued to be made in the testing or diagnostic instruments and in knowledge about neurological and physiological aspects of reading, including eye-movements, visual perception, sub-vocalization, reversals, and dominance, as well as in factors involving personality and emotional disorders and their relation to reading problems.

Using the interdisciplinary approach to the solution of many reading problems of students, College Reading Clinicians have continued to draw heavily upon the knowledge and experience of others, particularly in diagnosis and follow-up of cases, and for the most part, these clinics are doing a lively business in diagnosing, tutoring, and in evaluation of their work.

Looking briefly at the tutee, one finds him classified, more or less, as a disabled reader, no matter what his educational placement may be. Bond and Tinker (3) estimate that reading disabilities among elementary children range from 10 to 25 per cent, and further, that they are timid and lacking in self-reliance, confidence, and emotional stability. Henderson characterizes many of the Southern white migrants as withdrawn and covertly hostile while ascribing the tendencies toward overt verbal and aggressive behavior to Negroes, who have learning difficulties. (11) These also apply to middle-class children.

The per cent of disabled readers at the secondary level is as great, and many students enter college hardpressed for the skills necessary to compete with the more abled readers on a satisfactory basis. By this time, however, older students are able to assess their own strengths and weaknesses in a sense, and enter the reading improvement program either on their own or on the suggestion of their instructors or counselors.

As indicated in the literature and in the replies to the questionnaires submitted by the writer, students needing help in reading are referred to College Reading Clinics by a number of specialized persons as well as parents, for example, classroom teachers, principals, reading consultants, social workers, vocational rehabilitation personnel, school and clinical psychologists, friends of the family, psychiatrists, optometrists, pediatricians, neurologists, and other medical personnel. There are others who are self-referred, and who present themselves more readily when the services of the clinics are offered free of cost as shown in Table I below. In this category one finds Cornel University, the University of Florida, the University of Wisconsin (Madison), Jersey City State College, Southeastern Louisiana State College, West Washington State University, Southern University (Baton Rouge), the University of South Florida, and the University of Minnesota. The latter three, serving 6, 2, and 886 students respectively, reported that clinical services offered involved students enrolled at the college level. During the 1966-67 school year, then, a total of 1884 potential tutees received free services from nine college and university Reading Clinics. It should be pointed out that while no tutoring service was performed, complete psychological examinations were provided free for pupils of the community schools served by the Reading Clinic of Southeastern Louisiana State College.

Table I also shows five clinics with per student per semester fees ranging from a minimum of fifty cents to a maximum of five dollars on a per hour basis, plus (in two instances) a flat fee of $30.00 or $45.00 to enroll. It may be interesting to note that of the $4.00 per hour fee, with a twenty-hour minimum required registration, the Clinic receives only fifty cents, while the tutor gets $3.50 of the amount. Charges assessed by eight other Clinics in this report range from a low of $16.67 to a high of $300.00 for individual tutoring. One of these eight Clinics charged a fee of $195.00 for small group tutoring, while

TABLE I
Tutoring Fees Per Student Per Semester in Twenty-four Reading Clinics During 1966-67

No. Clinics	Students	Fees
9	1884	None
2	160	$ 0.50– 3.00 p/hr.
1	108	Prorated*
1	264	$30.00– 3.00 p/hr.
1	65	4.00 p/hr.**
1	40	$16.67
1	200	$25.00
1	68	$35.00
1	152	$45.00– 5.00 p/hr.
1	54	$50.00
1	140	$60.00
1	79	$65.00
1	74	$75.00
1	371	$150.00
1	496	$195.00*** $300.00****
Total 24		

*Basis of family income
**20 hr. minimum
***Small group basis
****Individual basis

another charged $[illegible].00. Tutoring sessions were held from forty to fifty minutes on the average with several ninety-minute sessions from two to five days per week, serving a total of more than 3,655 so-called disabled readers. An additional five hundred pupils received psychological evaluations but no tutoring in the Clinic.

How Tutors Were Selected. If the work of the Reading Clinic is to succeed, a tutor should be carefully selected. Junken (13) suggests that all tutoring has a therapeutic value and reminds the clinicians that tutors should (1) enjoy children and youth, (2) possess skill in acquiring and using many methods and techniques, (3) exhibit patience, and (4) use their knowledge of child development to enable tutees to lift their levels of aspirations to greater heights. To this list, Payne would add:

> A basic requirement for a tutor should be that he would have adequate knowledge in the subject field involved, plus a personality that qualifies him to work with pupils on a face-to-face basis.[1]

A tutor or teacher lacking in these major aspects is likely to do more harm than good to the already distressed student. An examination of the respondents' replies to the question, "How are your tutors selected?," revealed the following:

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[1] William H. Payne, "Organized Tutoring: New Dimensions for Increasing Skills," *Journal of Secondary Education*, XLII (January, 1967), 22.

1. Many tutors (teachers) are selected on the basis of their academic training, teaching experiences, and personality–as full paid members of the faculty.
2. Tutors are selected from Doctoral student groups in Counseling and Educational Psychology, who have completed or are in the process of completing courses in Diagnosis and Treatment of College Learning Difficulties.
3. Tutors are selected from those holding the M.A., M.S., or M.Ed. degree in Reading and after an interview with the Director of the Clinic.
4. Tutors are selected from teachers enrolled in graduate work toward the M.A. or Ph.D. degrees, or graduate assistants who spend twenty hours in the Clinic per week.
5. Tutors are selected from the best graduate students in the reading program interested in becoming reading teachers, or experienced classroom teachers taking part-time work and enrolled in "Foundations of Reading," or "The Reading Clinic."
6. Tutors are selected from graduate students and undergraduate seniors registered in "The Role of Reading in the Secondary School," or Diagnostic and Remedial Reading courses.

Of the 861 tutors (and teachers) in the 24 Reading Clinics, approximately 132 were paid professionals, 359 paid tutors (per hour), and 370 unpaid tutors presumably enrolled for course credit with tutoring as partial fulfillment of the requirements for completion.

Methods of Diagnosis. The first step in diagnosis usually involves an informal conference with parents of the students, during which family background information is given on forms provided by the Clinic. Information concerning the physical, emotional, and intellectual status of the student is also given, as well as parents' own assessment of the student's successes and failures in reading. For the older student, much of this information is secured from the school or college counselor's office, although these students are often required to complete a Reading Interest Inventory and an Inventory of Reading Skills.

Following the informal conference with students and/or their parents, the students undergo a complete battery of tests including visual and auditory screening, mental tests, diagnostic, and/or reading achievement tests, study skills tests, personality inventories, and, infrequently, projective tests. The type and number of tests will, of necessity, be determined by the clinician and/or tutor. In some instances additional testing will not be necessary by tutors at the beginning because reliable scores might already be available from other sources.

Returns from the 24 questionnaires indicate the use of a great variety of tests as shown below.

Tests Used for Psychological Evaluations in College Reading Laboratories, 1966-67

Mental

WISC/WAIS
Stanford-Binet
Otis Quick Scoring TMA
California MMT

Inventories

Hofstra Informal
Botel Reading
Standard Reading
Betts Informal Reading
Peabody PVT
Lorge-Thorndike Non-Verbal
Goodenough-Harris
SRA Primary MA
Differential Aptitude
Scholastic Aptitude

Reading Tests

Ammons and Ammons
California Reading
Cooperative Reading and Spelling
Davis Reading
Developmental Reading
Diagnostic Reading
Durrell Analysis
Gates-McKillop Reading
Gates-McGinitie
Gates Primary Tests
Gilmore Oral Reading
Gray's Oral Reading P.
Iowa Silent Reading
Informal Basal Reading
Learning Methods Test
McCullough Word Analysis
Metropolitan Achievement
Michigan Vocabulary Profile
Minnesota Study Habits
Nelson-Denny Reading
Phonics Survey (Iowa)
Roswell-Chall Diagnostic
Silent Reading Diagnostic
Spache Diagnostic Scales
SRA Reading Survey
Stanford Achievement
Stanford Reading Test Diagnostic
Spitzer Study Skills
Word Attack Skills Inventory (Central State College)
Wide Range Achievement Test
Dolch Word List
Ayers Word List

Projective Techniques

Kent-Rosenzweig Frustration
Rorschach
Raven

Sensory Screening

Bender-Gestalt
Benton Visual Retention
Frostig Developmental Test Visual Perception
Illinois Test of Psycho-Linguistic Ability
Visual and Auditory Screening

Ohio State, for example, revealed that more than a hundred different tests were available for use by the tutors, while the University of Chicago's list totalled more than sixty. One respondent, however, listed "none" in the "Tests Used" column, which also indicates that some other means of assessing reading levels may be in effect.

Although Sundberg (21) states that the Wide Range Achievement Tests are the second most frequently used achievement tests in psychological clinics, evidence does not support this assumption in the 24 returns. Only three Directors listed the WRAT among their preferences. Moreover, with the exception of both the WISC and the WAIS, which appeared on eleven returns, no other tests received frequency counts of more than four.

Tutoring. Tutoring is the heart of the remedial and clinical reading program in a College Reading Laboratory. Through tutoring, the professional and pre-professional are able to put theory learned in their course work into practice. It is for many, an exhilarating experience. Tutors gain a rare understanding of children in the one-to-one relationship that is all but impossible to gain in the classroom setting, and the tutees experience a joy in this relationship that undoubtedly escapes them in their regular school situations.

Following the psychological evaluation in the Reading Laboratory, the results are discussed with the Director and later with the parents or with the student himself, if a high school or college enrollee. Their full cooperation is enlisted. If it becomes apparent at some point that family relationships are unhealthy, the task becomes one of alerting the parents to the decaying family structure, and urging them to become more empathetic, more attentive, and more companionable toward each other. Parents are urged to refrain from making comparisons between their children's successes and failures, to provide a pleasant, quiet place for study, and to provide the necessary tools for effective study.

Parent or student-clinician conferences over, the tutor is introduced to the tutee, who, for certain, will give the tutor a long and penetrating look. Some interesting and revealing notions may be picked up in this very first meeting, for this will not be a tutoring session per se. Rather, it will be a "getting to know you" session in which the two people do just that. A shy child is somehow coaxed into talking about the things he likes to do; an overly talkative child is listened to patiently; and a college student's questions about speed reading, study skills, and vocabulary development are cautiously answered.

The tutor gets to know his tutee intimately, and plans his work for each session with certain objectives in mind. Written lesson plans are as effective in the tutoring sessions as in the regular school program. Stacks of materials should be available for the tutor's use, and the tutee is encouraged but not urged to take a book or so home with him. Frequent evaluations are made of the tutee's progress, and each should be responsible for keeping his progress record up to date.

Almost, but not all tutoring involves skill building. At times the tutor and also the tutee will engage in sociodrama, reading games, story-telling, short experience trips in and near the Clinic, and discussions concerning topics of interest, always with a purpose. Older tutees are far from being interested in nearby trips. In fact, too many out-of-school experiences could have contributed to their inability to read satisfactorily. What older tutees want is a quick way to learn how to study, how to build their vocabulary, and how to unlock strange words in a hurry. Like the younger ones, they too have experienced many embarrassing moments; when older students voluntarily register, most of them are eager to learn.

Occasionally, a tutor gets a tutee who is in the Clinic because "mama wants me to be." An understanding tutor may be able to help him overcome this negative attitude within a semester. Frequent conferences with the Director, the Psychologist, and others in the program may give some leads to the solution.

The writer had the pleasure of tutoring a very personable female subject during the spring of 1967. Kae was thirteen and in the seventh grade. Her Stanford-Binet Intelligence Quotient was within the normal range, yet her reading achievement was a full two years below her grade placement. Kae entered the reading sessions with gusto on every occasion, diligently absorbing herself in the tasks, changing from one activity to another without wasting time. She seemed to be a favorite at school among her peer group, a leader in her church club and well liked by its sponsor. It was perhaps this social leadership ability that inspired her to enter the Reading Clinic for help. Rarely did she want to stop for coke breaks. She preferred to spend the time selecting books in the Reading Room, and would often relate how she interested her classmates in books through illustrations.

It appeared that one of the factors contributing to her low reading skills involved changing schools. She had attended six different schools in seven years, and is now in her seventh school. Kae made nine months' progress when given a post-test battery of reading tests. Her mother now writes from another town that Kae is "leading her class as usual." She is anxious to know the I.Q. score, in order to be able to help her daughter more.

Tutoring usually ends with a complete written evaluation of the tutee's progress. A tutor feels good inside if she knows that her work has been profitable.

Summary. Although many of the Reading Clinics on College and University campuses are service organizations, existing for the purpose of assisting college students with their reading problems and with adjustment to college life, many of them offer clinical services for neighboring public and private school students as well.

Of the forty reading clinics the writer attempted to study through a brief questionnaire, 13 reported no tutoring services, 24 reported some form of tutoring service for more than 3,655 students, and 3 made no reply. Several of those reporting no tutoring service, however, made notations about their clinical services, such as—the University of Maryland has nothing to do with tutoring except to stock some individual learning material for use by students who need review. Similarly, the University of Indiana uses programmed instruction with staff members serving as study counselors, who diagnose the needs, assign appropriate materials, and supervise more than 800 students' work each year. On the other hand, the University of Georgia and Texas Technological College reported that the only tutoring service rendered on their campuses was that of the athletic department.

Of 24 clinics offering tutoring service, three reported that college students only were served during 1966-67. One-third of the clinics ranging from the smallest to the largest number tutored offered their services free of cost to the students, while fixed fees in the remaining clinics ranged from fifty cents to $300.00. From these data, it is evident that clinical services were not restricted to those who were able to pay for them.

The varied sources of referrals in this report attest to the wide recognition of the reading aid offered by college and university reading clinics to so-called disabled readers. More than 50 per cent of the respondents stated that their tutoring services were offered as an aspect of clinical procedures in some type of remedial and diagnostic reading courses. For the most part, all clinicians were well-trained for the work, ranging from PhD's, EdD's to B.A. degrees. In only two cases tutors were college seniors doing their student teaching, and enrolled in one of the reading courses for training.

In light of the fact that there can be no dichotomy between teaching and learning, (2), the professional as well as the pre-professional tutor stands to learn as he teaches, for, when the right tutor directs his tutee in a series of high level learning experiences, it will be difficult to elude the learning process himself. It is also worth remembering that not all tutoring involves teaching reading—but, as a famous Oxford tutor expressed it, where "the intercourse between tutor and pupil is not so much a matter of definite instruction as a companionship in discussion and discovery," then the ends can be considered as well as the means. (18) This is, perhaps, best illustrated by a statement in the brochure of the University of Chicago Reading Clinic which states that in some cases, physical and emotional difficulties may need to be corrected before individual instruction can begin.

It is hoped that the Reading Clinic as a center for research and for training of personnel will continue its services of diagnosing, tutoring, and counseling students at all educational levels in the interest of salvaging potential drop-outs on one hand and boosting the creativity of the potentially gifted on the other.

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Combining a Program of Reading Improvement with the Study of History

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Need for the Program. In *The Age of the Scholar,* President Nathan Pusey of Harvard University expressed the common hope of countless teachers in the liberal arts by stating, "What teachers still hope for from students, even the best of them when they come to college, is chiefly, and modestly, only that somewhere along the line they shall have learned to read. I do not mean by this simply to have acquired the ability to identify words and negotiate sentences. This is easy enough. But truly to read. By this I mean to interrogate significant texts, to tear them apart with the mind, understand them, rend their thoughts, enter into them, and in the process possess them." (6)

It is apparent that many college freshmen—even those with above-average scores on standardized reading tests—encounter serious difficulties with "reading" courses. The term "reading" courses defines that type of course found most frequently in the various subject areas of the Humanities and the Social Sciences in which the students are expected to read extensively in primary and secondary sources. It is also apparent that class lectures and discussions do not necessarily help to clarify significant meanings so that much of what is read is of a relatively independent nature. In addition, the student is expected to read extensively in preparation for research papers which require other reading-study skills. Even the good student—without the training in advanced reading skills—is placed in jeopardy at an early stage of his academic career because he soon finds himself ill equipped to deal with the volume of material he is expected to read, comprehend and master. For the first time he finds almost no limit placed upon the amount of material he is to read. More significantly, he is expected to grasp this material to a high degree of mastery so that the ideas acquired through the reading can serve as tools for evolving other ideas vital to class discussion and report writing. He is unprepared for the immensity of this task. He finds himself resorting to various expedients in order to "get through" as best he can, e.g., book digests, sketchy course review books, encyclopedic reference materials too highly generalized to be useful, etc. The student often realizes that completion of the whole assignment is futile, and develops a compensatory attitude which regards completion of assignments and course requirements as his main purpose in the course instead of something more significant and closer to his real educational objectives.

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The need for specific advanced teaching of the reading-study skills needed in specific curriculum areas has long been recognized at the high school level. Back in 1948 the National Society for the Study of Education devoted one section of its Yearbook on *Reading in the High School and College* to "Making Reading an Effective Instrument of Learning in the Content Fields." (4) Four years later the annual University of Chicago Reading Conference was devoted entirely to *Improving Reading in All Curriculum Areas.* (3) In the next decade concern with the problems of reading in content areas increased, but few high schools and fewer colleges actually tried coordinating their developmental reading programs with content areas. Recently, however, some schools have used history or science materials to teach reading skills or have had reading specialists work with content area teachers to help them modify their teaching approach to include identification of skills needed to read with understanding. (2) (5)

The development of a college freshman coordinated history-reading program which takes the reading beyond the mechanical devices or skills-drills approach and helps to develop critical thinking in a content area would therefore appear to be a fruitful area of study.

One measure of national concern with ineffective and inefficient student reading lies in the hundreds of college and university reading programs set up in recent decades all across the country. The experience of these programs has shown that reading and study skills can usefully be made the subject of formal instruction and supervised practice, and that the resulting benefits go beyond remedying deficiencies of slow students to releasing the latent potential of superior students. It must be emphasized that learning to read is a lifetime process, and that instruction is beneficial at all levels. We think further progress depends upon developing this type of instruction in close coordination, rather than merely in parallel, with regular academic work.

Objectives. The purpose of this program is three-fold:

(1) To analyze the factors contributing to the difficulties of college-level students when faced with those courses which involve a considerable amount of reading.

(2) To analyze the content of one specific course ("The History of Western Civilization" hereafter referred to as History 1-2) from the point of view of both instructor and student. The following aspects of the course have been considered: organization of lectures, note-taking, reading and listening comprehension skills, and report writing.

(3) On the basis of the above analysis, we are developing a combined history-reading course (hereafter referred to as Reading 1-H) which will be designed to improve the reading-study skills of college freshmen as they learn the content of the history of western civilization.

Procedures. The core of our program is the design and introduction of a new two-semester freshman Reading course (Reading 1-H) in conjunction with History 1-2. Each week, in addition to the history program, students meet in small groups in the Reading Center for three hours of instruction and practice in reading skills, note-taking and study techniques, using some of the assigned history selections. Prior to the initiation of this reading course, we conducted a thorough study of the design and actual workings of History 1-2.

Students were tested initially by means of the Cooperative C-2 Reading Comprehension Test, the Nelson-Denny Reading Test for High School and Colleges and an informal History-Reading Inventory. The Cooperative C-2 Comprehension Test and the informal Reading-History Inventory were administered during the first two sessions of the history classes, under the supervision of the reading instructors so that both experimented and control groups could be tested simultaneously.

The materials used in the reading course come in part from the curriculum of History 1-2, including the textbook and supplementary reading. (The History 1-2 reading includes materials of varying difficulty and function. This list appears at the end of this selection). Besides these history materials, the reading instructors used special materials to introduce the skills to be applied to the History materials.

Students will receive academic credit and grades for their work in the reading course separately from the credit and grades they receive in History 1-2, since our desire is to coordinate, not to merge, the two courses.

Implementation of Program. Analysis of History and Reading Programs (Sept. 1966-May 1967). Four instructors (two from history and two from reading) were granted one-quarter (3 credits) released time by the university to analyze the content of the history course and the reading problems encountered by college freshmen taking this course. One history instructor actually participated in one semester of the reading program attending classes twice a week, while the two reading instructors sat in on history lectures and took notes along with their fellow classmates. Some of the history lectures were recorded so the reading instructors could use them as meaningful instructional tapes for note-taking. The four instructors met on a bi-monthly basis to evaluate their experiences, and to plan the content and structure of the new Reading 1-H course. It was decided that the history instructors would take prime responsibility for selecting the basic history vocabulary and concepts to be stressed by the reading instructors.

Pilot Experimental Program (Sept. 1967-May 1968). Two sections of 15 students are participating in the experimental Reading course coordinated with 2 sections of History 1. Dr. Miriam Schleich and Dr. Sidney J. Rauch are teaching the reading sections, Dr. John Follows and Mr. Linton Thorn of the history department are teaching the history sections.

Four history sections of 30 students each are being used in this study. Two sections have 15 each of the Reading 1-H students and 15 other students not taking Reading 1-H. The other two history sections have 15 each Reading 1-H volunteers who are being used as controls during the first semester and who will be the experimental Reading 1-H students during the second semester.

Selection of student volunteers was a difficult problem. It was decided that a flyer would be sent out to all incoming freshmen from the Dean of Students office, along with materials for selecting their freshmen program. The flyer invited interested students to participate in the study, explaining its potential value to them. The flyer (written by Mr. Linton Thorn of the history department) read as follows:

"Scientists, businessmen, statesmen—all have in common with students the need to master large amounts of reading. Perhaps one person needs to cut his reading time, another to read more in a given time. At Hofstra we are anxious to help students improve their reading skills, since we find this basic to all academic work, as well as to all professions and business careers. Next fall we will begin a special program to stimulate reading skill in a new way. We invite you to participate in this program as a part of your regular freshman academic work.

"Advanced reading skills can be taught. But when they are taught, in our colleges and universities, they are generally taught in courses that are separated from the regular curriculum and that are taken mainly by students needing remedial work. Since good students can profit as much as poor students from reading instruction, and since students are naturally most interested in what immediately and directly pays off in their other work, we are developing a new idea. We plan to offer a reading course for freshmen in general, one that draws some of its instructional materials directly from another academic course being taken by the same students at the same time.

"Hofstra's Reading Center, a national leader in the field, presently offers a one-semester course called Reading 1, which is optional except for some students with low-to-average reading skills.

"Our history department teaches a two-semester course in the history of western civilization, History 1-2, which is required of all undergraduates. In 1967-68 members of the history department and the Reading Center will begin a combined program, at first on a small scale: selected students will take History 1-2 and a special version of Reading 1 at the same time. They will be taught by members of the reading and history faculty who are familiar with each other's work and in their reading course they will receive direct help with their history assignments. For example, students will learn principles of note-taking in the reading course by means of exercises based on the current assignments in the history textbook.

"We need interested freshmen to help us develop this program, with a view to its eventual adoption as a general requirement in Hofstra's freshman year. In practical terms, we ask if you will (1) take History 1-2 as a freshman (rather than later on, as some do), and (2) take Reading 1-H at the same time (rather than taking it later on, or skipping it entirely). Each course carries full academic credit toward graduation: History 1-2, with two semesters of three credits each; Reading 1-H, with one semester of three credits. Tuition charges are proportioned to academic credits, as usual.

"If you would like to participate in this history-reading program, please let us know by returning the inclosed form by— —(date)
We are confident that all who volunteer will be helping themselves, as well as helping us to help others."

Evaluation. In addition to retests on the three tests previously mentioned, the history grade will also be evaluated. Both the two reading instructors and the two history instructors will participate in these evaluation procedures. A more controlled study will depend upon the results of this pilot program.

Course of Study

Required History Reading for the first semester:

Gerrit P. Judd, *A History of Civilization* (Macmillan)

Francis M. Cornford, *Before and After Socrates* (Cambridge University Press)

Plato, *The Last Days of Socrates* (Penguin)

Lynn White, Jr., *Medieval Technology and Social Change* (Oxford University Press)

Roland Bainton, *The Reformation of the Sixteenth Century* (Beacon)

Required Reading 1-H texts for the first semester:

The Modern Essay—edited by Morris, Walker, Bradshaw. (Harcourt, Brace and World)

Controlled Reader and Study Guides

Special material prepared by the Reading instructor

Topics covered by Reading 1-H instructors (using History texts and specially prepared materials)

1. Survey techniques.
2. Paragraph analysis.
3. Signals and other author cues.
4. Critical reading.
5. Analysis of structure of longer selections, including author patterns such as "cause-effect," "question-answer," "problem-solution," etc.

6. Note-taking.
7. Vocabulary study (prepared by history instructors)

It must be emphasized that this is a pilot program. It is now in the process of being tested. Our feelings, to date, are cautiously optimistic. We are pleased with the enthusiastic cooperaton of the history faculty. This, alone, is a major contribution to the study. We know of no other instance in which a reading center and a history department have collaborated so closely in an effort to improve the reading of college freshmen.

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Implementation of an Eight Point Program at the College-Adult Level

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At the sixteenth annual meeting of the National Reading Conference the writers (2) set forth eight principles to be considered in conducting a college-adult reading program. Following this presentation, discussion centered around the implementation of the program. In response to several inquiries the writers have attempted to show in this paper how each of the eight principles is actually applied in providing instruction in reading at the college-adult level.

AN OVER-VIEW OF THE PROGRAM

Participants in the college-adult reading program at Western Michigan University are freshmen, sophomores, juniors, seniors, graduate students and adults in the community. Their ages range from 16 to 65 years. Classes of 36 to 40 students are common in this non-credit course. Classroom procedures consist of lectures, demonstrations and laboratory work, and the actual application of reading techniques to the study of textbooks and reference material used by the students as they prepare for their regular academic work. A typical class period consists of approximately fifteen minutes spent with Controlled Reading Study, twenty-five minutes in demonstration and lecture, and generally ten minutes with class discussion. Classes meet for fifty minutes twice each week during the semester. Demonstrations frequently make use of students in the group who ask for assistance with specific problems. Many demonstrations, for example, show how to skim a textbook, how to read for main ideas, how to read a short poem, or how to read for problem solving. The writers wish to emphasize that the materials used in demonstrations consist of the students' own textbooks. Individual conferences and extra-class group discussions are encouraged. It is assumed that the effectiveness of the reading program is proportionate to the number of students who ask for conferences and who participate in "seminars" for extra-class discussion. Students are shown how to apply reading procedures directly in their academic work and are taught how to make effective use of their own reading materials. Pauk (3) at Cornell is an outstanding exponent of this approach. Four staff members of the Psycho-Educational Clinic participate in the college-adult program and share the responsibilities of conferences and extra-class group meetings and seminars. In order to utilize fully the experiential background of the students the "Buddy plan" of study is encouraged. This approach to learning utilizes the informational background of two students as they work together to accomplish their common purpose. The implementation of the eight principles followed in conducting this program will be briefly discussed.

The Teacher Must Stimulate, Inform and Guide. This basic principle can be applied by showing students how effective reading contributes to their success in the classroom and on the job. Generally students are not predominantly interested in learning about the development of reading skills until they see how they are directly related to their success in the classroom and on the campus. Economy of time and effort seems very important to them. Students can be shown how reading ability differentiates superior and inferior college students. The characteristics of good readers and good students can be pointed out. Most important of all, it can be shown that college men and women can improve both their reading skills and their point-hour-ratios. Class discussion at this time can be stimulated so as to bring into the open opinions, attitudes, and points of view in which the student is concerned. All activity in the class must be goal-oriented and result in progress toward the students' objectives. The sequence of events in this process is, first, *stimulation* which leads, second, to the *activity* of purposeful reading, investigation and study. Third, *difficulty* is experienced and, fourth, *aid* is suggested by the instructor and frequently reenforced by class discussion. This, in turn, can and does, in the majority of instances, result in, fifth, *achievement* and success on the part of the student. The reporting of an actual problem illustrates this sequence of events. John, a sophomore reading at the 35 percentile, was having difficulty in his social studies class. His instructor, who apparently was trying to stimulate his class so that students might have the satisfaction of seeing for themselves cause-effect relationships, had asked his students to read several texts dealing with the reconstruction period following the War of the States. John's stimulation had led to activity and later to difficulty. He reported that he was lost in a muddle of events which to him had neither beginning nor end. In provision of aid for John in the adult reading class, he was shown how to identify major historical events and minor incidents which led to them. He was shown how these major events in turn contributed in a consequential manner to other situations and circumstances. In accomplishing this goal, John was shown how to outline materials from all sources under three headings, *events, causes* and *consequences*. In this manner he was able to summarize all the important historical details of the reconstruction period. This systematic study resulted in a term paper which was graded A by his instructor. John reported his success in the reading class and his enthusiasm stimulated other members of the group to employ a similar approach in areas of concern to them. Guidance can be provided by meeting the needs of students, by well-planned programs, and by lectures, demonstrations and free discussion periods

Every Student Should Know How Well He Reads and Should Select for Himself the Specific Reading Skills He Needs to Acquire. This principle can become operative by the administration of a reading test having educational significance to the student and by the use of the Informal Reading Inventory in Appendix A of the text, *Reading, A Key to Academic Success.* (1) The Iowa Silent Reading Test, Advanced Battery, has been employed chiefly because data resulting from its administration are understandable to and usable by the student. Guidance can provide for him information concerning both the quantitative and qualitative aspects of this test. Class distributions can be made so that each student can compare his status to the performance of his peers. Individual scores can be explained in terms of percentiles so that each student can see for himself what reading skills he possesses and what skills he does not possess. The Informal Reading Inventory provides more detailed and individualized information concerning the student's needs. Certain physical, psychological and environmental factors which may affect his reading performance can be identified and interpreted. Class discussion can bring into sharp relief the student's attitudes and some of his immediate problems. Even his "gripes" and the reactions of his peers to them can be informative. The reading test scores, data from the Informal Reading Inventory, and class discussions of the student's adjustment in his environment aid him in determining his own reading and study needs.

The Student Should Understand that He Can Improve His Reading Ability and that the Responsibility for Doing So Rests with Him. Principle Three can be applied in part by helping the student to believe that he can do what other college students have done. Barbara, for example, during her sophomore year had an initial score on the Iowa Silent Reading Test of 188 and a final test score of 201. These scores have grade percentiles of 67 and 96, respectively. It is obvious that this young woman is a better than average reader. She was, however, in academic difficulty apparently because of her inability to make effective use of her textbooks. In the class in Adult Reading, Barbara's major objectives were reading for main ideas, learning what to accept and what to reject, and learning how to read in the field of literature. During a class period, Barbara reported that she had not only improved in her ability to read but in her ability to organize and express her ideas in writing as well. It was apparent that Barbara had assumed responsibility for the accomplishment of her objective and that her self concept was enhanced by her success. This was stimulating, not only to Barbara but to the members of the class as well.

Principle Three can be employed by demonstrating to the student that he, according to his own records on file in his folder, has increased his performance with the Controlled Reading Films (4) shown daily in the classroom. His growing vocabulary lists in the various content areas and his added skill in identifying main ideas in his own textbooks furnish proof of his reading progress. He strives for more and more gains and has the realization that as an adult he is successful and responsible for his own progress. This reassuring evidence has its effect upon the class. Students can be encouraged to relate to members of the group their successes in applying suggestions made in the course. Discussion of individual problems opens the way for instruction directed toward the needs of the individual and furnishes the instructor more and more knowledge concerning the requirements of his class. Mike, a senior, reported that his chief problem in reading was one of concentration. It was found that nearly all the students in the class experienced this difficulty. Consequently, three class periods were devoted to a discussion of physical, psychological and environmental factors affecting ability to concentrate. Remedial measures were suggested and students were encouraged to apply them. Individuals reporting success in dealing with their problems provided marked group stimulation. Success then became contagious.

Each Student Should Be Given An Opportunity to Set Up His Own Reading Objectives and to Attain Them at His Own Rate and In Accordance with His Own Plan. This principle can be applied by encouraging the student, after he has selected the reading skills he needs to acquire, to develop them as he completes the requirements for his college classes. Mature college men and women appreciate being "*on their own*" and free from an over-emphasis on "directed activities" which they report are stressed in their college classes. Students are advised to make use of their text, *Reading, A Key to Academic Success*, by reading and applying that which is related to their immediate needs. Contents of lectures and demonstrations are selected to meet a wide range of subject matter requirements. Individuals in the class are encouraged to take ideas from all sources and put them to their own use. The student, as far as possible, is made to feel that he can get help with this project by asking for assistance. Generally, with the student's permission, his problem is discussed before the class and suggestions are provided by the instructor and by students in the group.

From the teacher's point of view, this principle can become operational by showing students how to develop certain basic skills which can be applied at various levels and in different content fields. Chapter reading, for example, can be taught and demonstrated simultaneously to individuals reading at several levels and from a wide assort-

ment of textbooks and reference materials. Each semester students reading at the 6th, 8th, 10th, 12th and college levels are used in a demonstration to show how their objective is accomplished. The visual, auditory, kinesthetic, tactual approach to word study is equally effective at all degrees of academic attainment. In fact, all of the reading skills developed in the class can be applied in most subject matter fields and utilized by individuals reading at grade levels six to sixteen. With this instructional plan in operation, grouping to compensate for individual differences is not essential to the success of the program. Although the lectures and demonstrations are presented to all the students at one time, the instruction remains individualized to the extent that each student selects his own reading objectives and attains them in his own way. This principle can best be utilized by stimulating the student to accept reading concepts, approaches and techniques expressed in the class which he can apply creatively to his pattern of activities on the university campus.

Attention Should Be Given to Physical, Psychological and Environmental Factors Which May Affect Reading. Principle Five can be utilized by careful survey of data resulting from the Informal Reading Inventory so as to identify the physical, psychological and environmental factors which may affect the student's reading performance and academic success. In Part I of the inventory physical, psychological and environmental factors are explored by means of questions which may be answered by making a circle around Yes, No, ? In Part II of the inventory the reading areas of vocabulary, concentration, work-study skills, rate of reading, problem solving and critical reading are investigated by questions to be answered in the same manner. This inventory, along with interviews and observations of the student, helps to individualize the reading program and to discover some of the causes of the student's reading disabilities. To remedy or mitigate causal factors, cooperation with individuals from other disciplines is necessary. Frequently the services of physicians, counselors, and academic advisors are required. Group discussions and "seminars" designed to provide group therapy provide aid to the student and furnish information concerning the student's needs and attitudes.

The Student Should Be Taught to Read Effectively the Texts Required in His Courses. This crucial principle can be applied by showing students as they use their own materials how to:

Read for main ideas
Read for a purpose
Read to make ideas their own
Learn what to accept and what to reject
Learn to skim a textbook
Develop adequate rate and flexibility

Learn to concentrate
Learn to read various kinds of literature
Learn to read in the field of mathematics
Learn to read in the field of science
Learn to read in social studies
Learn to read creatively.

These reading skills are developed by means of lectures and demonstrations which stimulate the student to apply what he has heard and seen to his regular daily work. An attempt is made by the instructor to show how each skill is related to the academic success of the student. Guided activities are suggested, and the student is given an opportunity to carry out those which he believes can be helpful to him. The more capable student, with ideas of his own, is challenged to accept or reject his point of view by reading references suggested to him. Well-supported disagreement is encouraged. Time is spent during each class period in discussing problems encountered by students in doing their reading for class preparation.

Instruction Should Be Simple, Direct and Specific. Principle Seven can become effective by means of well planned lectures and demonstrations which are based upon *aims* to be achieved, *materials* designed to accomplish these objectives and well selected *procedures* and techniques. Instruction should be concerned with practical approaches rather than abstract theory about reading. It should consist of well structured directions to the student designed to show how various reading skills can be developed and integrated in a goal-oriented process which aids the student in accomplishing his purpose. Little can be achieved by "just teaching" or merely imparting facts no matter how important they may be. Instead, they should be chosen and designed to accomplish a purpose—the student's purpose.

Guided activities, an integral part of each chapter in the student's text, *Reading, A Key to Academic Success,* are designed to help the student bridge the gap between instruction on how to read and the the application of this information to the reading of his textbooks and reference materials. The student is able to see the relationship between these activities and his academic work. He is not apt to look upon them as "busy work."

The Student Should Evaluate His Own Achievement at the Beginning and End of the Term. Principle Eight is made advantageous by the administration of the Iowa Silent Reading Test both at the beginning and at the end of the semester. Profiles are drawn by the student and kept in his folder which is filed in a steel cabinet in the laboratory. The student uses his folder each class period for keeping intact his daily scores derived from the Controlled Reading Study, his completed assignments, his informal inventory, and his vocabulary lists for each of his courses. Some students add clippings from newspapers and magazines. The folder of each individual is a source of both objective and subjective evaluation. Progress over five months time can be evaluated in terms of interests shown by the student as well as by his achievement.

The student's estimation of his growth is of real importance to him. He can determine his improvement in terms of whether or not he can identify main ideas in his texts, read for a purpose, and actually make ideas his own. He can evaluate his growth in terms of whether or not he is able to master the contents of a chapter and integrate new ideas with old. He can evaluate his progress in terms of grades he has earned in his classes and in terms of his ability to concentrate during reading and study activities. A significant gain in standard scores between the initial and final testing is to the student a source of added confidence and pride in real achievement.

SUMMARY

In general, the eight principles can be effectively applied in teaching reading at the college-adult level by stimulating, informing and guiding the student so that he can use more advantageously his college texts and reference materials as he meets his regular academic requirements. The emphasis should be upon stimulation and guidance with instruction focused upon the immediate needs of the student. Each of the other seven principles is merely a means to this end.

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Phonics Skills of Teacher Education Student and Teachers

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One of the purposes of this report is to summarize the vowel phonics portion of research which deals with the word-attack skill knowledge of teachers. In addition, this report will present a number of problems for which new findings may be revealed.

There were many reactions to Rudolph Flesch's book, *Why Johnny Can't Read,* which was published in 1955. (13) In response to Flesch, the public school staff of Mattoon, Illinois, developed a series of articles, "How Johnny Learns to Read," which appeared in the *Mattoon Daily Journal Gazette.* (25) In Ypsilanti, Michigan, Kathleen Hester wrote a critique of *The Detroit Free Press* version of *Why Johnny Can't Read,* in June of 1965. (17) Significantly, Hester's first line was: "Reading is more than saying all the words on the page correctly." (17) The preceding examples are but a few of the many reactions and defenses to Flesch's major charge that phonics was grossly neglected in the teaching of reading.

Apparently, as the initial furor died down, the scholars gradually began to investigate the teacher aspects of the problem. Thus, within the short time between 1959 and 1963, Schubert (20), Aaron (2), Gagon (14), Farinella (12), and Ramsey (19), published their investigations. According to Gagon and Farinella, no reported investigation can be found prior to 1959. The most recent investigation was completed by Spache and Baggett. (24) Clymer's 1962 research was related to these studies in that his report concerned the utility of phonics generalizations. (8) Clymer's concept of percent of utility for generalizations adds a new dimension by which the knowledge of phonics principles can be evaluated. The results of the preceding investigations may be generalized as follows:

1. Teachers were weak in terminology such as diphthongs, diagraphs, etc. (20)
2. Teachers were almost as confused about vowels as were the children. (20) (19)
3. In some cases, professional training did not seem to result in notable differences in teacher skill. (12)
4. By and large, more intensive professional training involving clinical experience seemed to produce more knowledgable teachers. (14)
5. Teacher assignment by grade is not always an indication that more phonics would be known by the assignment level, but there is

meaningful evidence to show that at the extremes, elementary teachers know more phonics than junior and senior high teachers. (24)

6. Experienced teachers know more phonics than inexperienced teachers. (2) (24)

7. Learning phonics and word-attack skills involves more time and reality-related instructional procedures than existing reading methods courses provided on the teacher education level.

8. There is very little scientific evidence showing that teachers with a superior knowledge of phonics and word-attack skills nurture superior reading achievement. (15)

9. All of the preceding investigations tested vowel phonics generalizations.

10. There are no teacher word-attack tests listed in Buros' *Mental Measurement Yearbook.* (14) (15)

11. The relative utility of what teachers know about vowel phonics generalizations is complicated by recent research. (8) (5) (11) (18)

12. There is agreement among investigators that teacher-training institutions do not do an adequate job of word-attack preparation during the period of 1957-1960. (2) (12) (14)

13. Very little research regarding individual teacher differences in ability to learn phonics and word-attack skills is evident. Variables such as intelligence, previous academic achievement, dialect, to mention a few, have not been investigated as factors influencing the mastery of phonics and other word-attack teaching skills.

14. The effectiveness of such recent innovations as simulation, programed learning, listening posts, and other media as they pertain to the improvement of word-attack skills, have not been researched at the college and teacher education level.

15. Hundreds of studies have been conducted on the phonics reading instructional program at the elementary level in contrast to the seven studies completed 1959 to 1965 at the college level.

16. There is no evidence that teachers know more about phonics in the 1962-67 period than in the 1957-59 period.

17. Differences between male and female teachers in phonic knowledge have not been investigated.

18. Ironically, teachers over-comprehended vowel phonics generalizations which are least useful, and they under-comprehended what is considered most useful according to an analysis of research. (7)

The preceding generalizations summarize the existing knowledge of teacher competency as it applies to *vowel phonics generalizations.*

THE PROBLEM

In the light of the previous summary of the research about vowel phonics competencies of teachers in the 1957-59 period, the following related questions will serve to pose the remaining portion of this investigation:

1. Have teachers improved in their knowledge of vowel phonics generalizations since 1957-59?

2. Are there regional differences in the vowel phonics generalizations of teachers?

3. How well do teachers comprehend vowel phonics principles in relation to the utility of the vowel phonics principles as designated in Clymer's research?

PROCEDURES

Basically, the procedure of this investigation is to retroactively analyze and to compare a pool of Aaron's Vowel Phonics Test results which the investigator has accumulated from 1962 to 1967. This was done in response to Professor Ira Aaron's report of his research in 1960. (2) Professor Aaron generously made his test available to the writer to conduct research on groups similar to his University of Georgia sample of 1957-58.

The time of Aaron's testing is important because it preceded investigations of teacher and student word-attack knowledge conducted by Gagon (14), Farinella (12), Ramsey (19), and more recently by Spache and Baggett (24). Thus, Aaron's findings are viewed as approximations of teacher phonics knowledge prior to the main response to Flesch's *Why Johnny Can't Read* and the clamor associated with it. Closely following Flesh's book came the investigations previously mentioned. As a matter of record, the investigators were less than satisfied with the word-attack knowledge of teachers. Hence, by comparing Aaron's 1957-58 test results with the 1962-67 total phonics test results, on the Aaron Vowel Phonics Test, the investigator seeks to determine whether there is evidence to support the notion that teachers have improved in their knowledge of phonics. More specifically, the subject of this investigation is vowel phonics generalizations.

The findings, to the question raised, have implications for the improvement of college reading methods instruction, in-service training programs for teachers, and hopefully, for the improvement of reading instruction for those who may suffer just as much from too much phonics instruction as from not enough phonics instruction.

The regional comparisons represent an attempt to determine the possibility that one region may expect more phonics instruction of teachers than another. The comparisons for the means and variances are reported for all of the groups available to the investigator for testing. The University of Georgia data are reported from Aaron's investigation and obviously do not represent valid comparisons for the present teachers and students.

The question regarding percent comprehension and percent utility was in direct response to Aaron's (2) findings that some principles were understood more than others. Aaron noted that various principles needed to be stressed more than others in college reading methods courses. Since Aaron's findings, Clymer's (8) percent utility concept for phonics principles has been reported. Thus, with the limited data available, the difference between percent comprehension and Clymer's percent utility for the same principle is tested for statistical significance. Attention and analysis are focused on the three most useful and the two least useful principles tested.

The computations necessary to compute the mean, standard deviation, critical ratios, and the standard error for proportions were based on procedures taken from Downie and Heath. (9)

The *F* ratio procedure recommended by Yamane was used to compare variances of groups in this investigation. (26)

Graphical analysis was used to portray the comparisons of the comprehension of teacher knowledge of vowel principles with the percent utility of the same principles.

The following null hypotheses are stated in anticipation of the presentation of the results on the Aaron Vowel Phonics Test:

1. There are no significant differences in the variances and means of Aaron's 1957-58 sample of test results and the present Texas, Oregon, and Missouri samples based on the 1962-67 test results.

2. There are no significant differences between the variances and means of the inter-regional groups.

3. There are no significant differences between teacher percent of comprehension and percent utility of vowel phonics principles as measured by the Aaron Vowel Phonics Test.

THE SUBJECTS

The 1962-64 sample of one-hundred-ninety-eight graduate students of Oregon State University were graduate students who were teachers or employed in kindred professions. The following percentages are rough approximations:

30% of sample probably elementary teachers,

50% of sample probably secondary teachers,

20% of sample were a miscellaneous undetermined group of people preparing for college teaching, guidance, social welfare, and related professions. Geographically, the west coast from California to Canada and Hawaii was represented in this group of graduate students enrolled in remedial reading courses. This is a geographically heterogeneous sample.

All of the above and following students were administered Aaron's Vowel Phonics Test within the second week of the semester or quarter.

The 1965-67 sample of sixty-two Lamar State College of Technology graduate students were for the most part residents of an area within one-hundred-fifty miles of Beaumont, Texas. These graduate students were also experienced teachers with abundant opportunities to attend reading work-shops.

The Lamar undergraduates were elementary education majors. They could be considered regionally homogeneous. It should be noted that ten percent of the undergraduates were young mothers and that they were "drop-ins" who may have learned phonics from the homework assignments of their children. About ten percent of this sample had a three-semester-hour course in language arts in which a unit on word-attack skills had been taught.

About three percent of the students, who were English minors, had a unit on phonetics from the English department. This group took the phonics test in eleven different three-semester-hour reading-methods courses taught by the writer.

The class of twenty seniors of Culver-Stockton College, Canton, Missouri, did not have any prior professional education courses. Geographically, they were primarily midwesterners from the suburbs of Chicago, St. Louis, and Kansas City.

Aaron (2) described his 1957-58 sample as predominantly residents of Georgia. Of the two-hundred-ninety-three people investigated, one-hundred-four were teachers with experience, and one-hundred-eighty-nine were teachers in preparation without previous experience. There were ninety-seven primary teachers, one-hundred-twenty intermediate teachers, and seventy-six junior and senior high school teachers.

THE TEST

The Aaron Vowel Phonics Test was generously made available to the investigator by Professor Ira E. Aaron (2) of the University of Georgia. The present investigator administered the test to his classes in remedial and developmental reading at Oregon State University, Corvallis, Oregon, Culver-Stockton College, Canton, Missouri, and Lamar State College of Technology, Beaumont, Texas, from 1962-67.

The test was constructed around the following eight principles:

1. When *c* comes before *e*, *i*, or *y*, it usually is soft; otherwise it is hard.
2. The sounds of vowels followed by *r* usually are modified.
3. Vowels in open syllables (those ending in vowels) usually have long sounds.
4. When *g* comes before *e*, *i*, or *y*, it usually is soft; otherwise it is hard.
5. In short words ending in *e*, the *e* is silent and the preceding vowel usually is long.
6. Vowels in closed syllables (those ending in consonants) usually have short sounds.
7. When *a* is followed by *l*, the *a* usually is neither short nor long.
8. When two vowels come together, the first is usually long and the second is usually silent. (2)

A sample item from the test is as follows:
"The *i* in *stri* has the same sound as (1) *i* in light, (2) *i* in ill, (3) *i* in charity, (4) *i* in fir, (5) (none of these." (2)
Other items similar to the above composed the test.

THE RESULTS

Comparison of Combined 1962-67 Group Variances with Aaron's 1957-58 Variance.—Table 1, reveals that Aaron's 1957-58 groups had greater variance than the 1962-67 groups. In fact the *F* ratio is significant at the .05 level. The previous results take on additional meaning in Table 2.

Comparison of Combined 1962-67 Group Means with Aaron's 1957-58 Means.—Table 2, reveals that the differences between the two means favors the 1962-67 groups and the difference is statistically significant at the .01 level.

Since there is a difference in variances and in means, the null hypothesis that there are no differences in teacher knowledge of vowel phonics between 1957-58 and the 1962-67 groups is rejected.

These results suggest that there may have been a shift from the lower achieving end of the teacher population which has moved up to account for the higher means in the 1962-67 groups.

TABLE 1

COMPARISON OF COMBINED 1962-67 GROUP VARIANCES WITH AARON'S 1957-58 VARIANCE

Aaron's 1957-58 Group		Combined 1962-67 Groups			
Number	**Variance**	**Number**	**Variance**	**df**	**F**
293	70.90	571	57.51	292/570	1.23*

TABLE 2

COMPARISON OF COMBINED 1962-67 GROUP MEANS WITH AARON'S 1957-58 MEANS

Aaron's 1957-58 Group			Combined 1962-67 Groups					
Number	**Mean**	**S**	**Number**	**Mean**	**S**	**D**	**SED**	**Z**
293	34.22	8.42	571	37.52	7.58	-3.30	-0.59	-5.64**

Comparison of variances between all available groups on the Aaron Vowel Phonics Test (Table 3) yields data to show that there are six significant differences in the *F* ratio of variances out of ten comparisons. The Lamar Tech graduate group of experienced teachers accounts for four of the six significant *F* ratios. The University of Georgia accounts for the two other significant *F* ratios. The least mature and inexperienced undergraduates have the lowest variances.

TABLE 3
COMPARISON OF VARIANCES BETWEEN ALL AVAILABLE GROUPS ON THE AARON VOWEL PHONICS TEST

Samples	Number	Variance	Samples	Number	Variance	df	F
Lamar Graduates	62	106.87	Oregon State University	198	43.13	61/197	2.51**
University of Georgia	293	70.90	Oregon State University	198	43.13	292/197	1.64**
University of Georgia	293	70.90	Lamar Graduates	62	106.87	62/106	1.52*
Lamar Undergraduates	291	49.23	Oregon State University	198	43.13	290/197	1.14
Lamar Undergraduates	291	49.23	Lamar Graduates	62	106.87	61/290	2.20**
Lamar Undergraduates	291	49.23	University of Georgia	293	70.90	292/291	1.44**
Culver Stockton	20	38.07	Oregon State University	198	43.13	197/19	1.08
Culver Stockton	20	38.07	Lamar Graduates	62	106.87	61/19	2.71**
Culver Stockton	20	38.07	University of Georgia	293	70.90	292/19	1.78
Culver Stockton	20	38.07	Lamar Undergraduates	291	49.23	290/19	1.23

* Significant at the .01 level
** Significant at the .05 level

TABLE 4
COMPARISON OF MEANS BETWEEN ALL AVAILABLE GROUPS ON THE AARON VOWEL PHONICS TEST

Samples	Number	Mean	SD	Samples	Number			Difference	SED	Z
Lamar Grad.	62	42.58	10.34	Oregon State U	198	38.41	6.57	4.17	1.39	2.99**
U of Georgia	293	34.22	8.42	Oregon State U	198	38.41	6.57	4.19	0.6780	–6.18**
U of Georgia	293	34.22	8.42	Lamar Grad. ·St	62	42.58	10.34	4.17	1.39	–2.99**
Lamar Un.Grad.	291	36.07	7.02	Oregon State U	198	38.41	6.57	2.34	0.62	–3.76**
Lamar Un.Grad.	291	36.07	7.02	Lamar Grad.	62	42.58	10.34	6.51	1.38	–4.73**
Lamar Un.Grad.	291	36.07	7.02	U of Georgia	293	34.22	8.42	1.85	0.64	2.86**
Culver Stockton Un.Grad.	20	34.15	6.17	Oregon State U	198	38.41	6.57	4.26	1.46	–2.93**
Culver Stockton Un.Grad.	20	34.15	6.17	Lamar Grad.	62	42.58	10.34	8.43	1.91	–4.3
Culver Stockton Un.Grad.	20	34.15	6.17	U of Georgia	293	34.22	8.42	0.0	1.47	–0.05
Culver Stockton Un.Grad.	20	34.15	6.17	Lamar UnGrad.	291	36.07	7.02	1.92	1.44	–4.33

** Significant at the .01 level

Comparison of means between all available groups on the Aaron Vowel Phonics Test (Table 4) shows that the Lamar Tech graduate students attained significantly larger mean differences in three out of the four comparisons. Oregon State University also attained significantly higher mean differences in three of the four comparisons. The Lamar undergraduates attained one significantly higher mean.

The consistency of the significant differences in variances and means in the preceding two tables is sufficient justification to reject the null hypothesis that no differences exist between regions. It appears that in this study the Texans knew more about vowel phonics generalizations than West Coasters, Oregonians, and Georgians of the 1957-58 groups.

Comparison of percent comprehension and percent utility of vowel phonics principles of University of Georgia students (Table 5 and Tables 6, 7, 8, and 9) of the various groups consistently show that the percent comprehension of the first principle, "Soft and hard *c*," is always much lower than its high utility. The difference between the percent comprehension and percent utility of this principle is significant at the .01 level in all cases except the small Culver-Stockton College group of twenty students.

Principle 2, "Vowel sound modified by *r*," is also a principle which is highly useful. The difference between percent comprehension and percent utility is also statistically significant at the .01 level in all but one of the five tables.

Principle 3, "Vowels in open syllables," also has a large significant difference between percent comprehension and percent utility at the .01 level in three of the five groups.

Of the eight principles tested in the Aaron Vowel Phonics Test, the preceding three principles are considered the most useful principles. According to Clymer's criteria, a principle was considered useful when it was applicable 75 percent of the time to a minimum list of twenty words. (8)

A brief view of Figures 1, 2, 3, 4, and 5 depicts the distance between percent comprehension and percent utility curves. The gap between comprehension and utility portrays the under-comprehension of the three principles with the highest utility.

Comparison of percent comprehension and percent utility of vowel phonics principles of University of Georgia students (Table 5, and Tables 6, 7, 8, and 9) of the various groups reveals consistently that the difference between the percent comprehension and percent utility of Principle 7, "Vowel *a* followed by *l*," and Principle 8, "Vowel diagraphs" are statistically significant at the .01 level. The positive sign of the differences should be noted in contrast to the huge negative differences of the principles with high utility.

Figures 1, 2, 3, 4, and 5 portray the data in the previous tables.

The fact that the percent comprehension curves are consistently above the percent utility curves for the two least useful phonics principles lends emphasis to the ironic nature of this relationship.

Thus, an analysis of the extreme percent utility and percent comprehension differences is sufficient to justify the rejection of the null hypothesis that there are no differences between percent comprehension and percent utility of phonics principles.

TABLE 5

COMPARISON OF PERCENT COMPREHENSION AND PERCENT UTILITY OF VOWEL PHONICS OF UNIVERSITY OF GEORGIA STUDENTS

Principles Tested in Aaron's Test		Percent Comprehension	Clymer's Percent Utility	Difference	S.E.	Z
1. Soft and hard *c*	(22)	58	96	–38	1.15	–33.00**
2. Vowel sound modified by *r*	(5)	68	78	–10	2.42	– 4.13**
3. Vowels in open syllables	(3)	61	74	– 7	2.56	– 2.73**
4. Soft and hard *g*	(24)	32	64	–32	2.80	–11.41**
5. Short words ending in *e*	(4)	68	63	5	2.82	1.77
6. Vowels in closed syllables	(2)	49	62	13	2.4	– 4.58**
7. Vowel *a* followed by *l*	(18)	85	48	37	8.52	2.92**
8. Vowel diagraphs	(1)	61	45	16	8.45	2.91**

N=293 students

Note: The abbreviated statements of the phonics principles and the data for the University of Georgia are based on Table 2 in Aaron's investigation. (2).

* Statistically significant at the .05 level.

** Statistically significant at the .01 level.

(22) Numbers in parentheses corresponds to the same rule in Clymer's investigation (8).

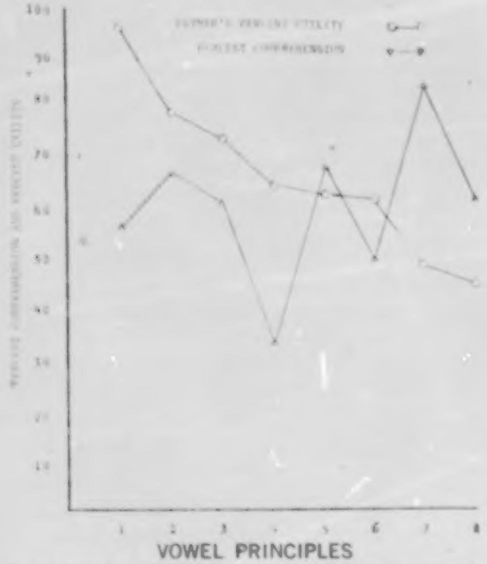


Fig. 1 University of Georgia student percent comprehension

TABLE 6

COMPARISON OF PERCENT COMPREHENSION AND PERCENT UTILITY OF VOWEL PHONICS PRINCIPLES OF OREGON STATE UNIVERSITY STUDENTS

Principles Tested in Aaron's Test		Percent Comprehension	Clymer's Percent Utility	Difference	S.E.	Z
1. Soft and hard *c*	(22)	75	96	-21	-1.64	-12.80**
2. Vowel sound modified by *r*	(5)	72	78	- 6	-3.46	- 1.73
3. Vowels in open syllables	(3)	56	74	-18	-3.67	-4.90**
4. Soft and hard g	(24)	42	64	-22	-4.01	- 5.48*
5. Short words ending in *e*	(4)	63	63	0	0	0
6. Vowels in closed syllables	(2)	59	62	- 3	-4.06	- .74
7. Vowel *a* followed by *l*	(18)	75	48	28	4.17	6.70**
8. Vowel diagraphs	(1)	59	45	14	4.16	3.36**

N=143 Students

The number in parentheses after each rule indicates the equivalent principle in Clymer's investigation

* Statistically significant at the .05 level.

** Statistically significant at .01 level.

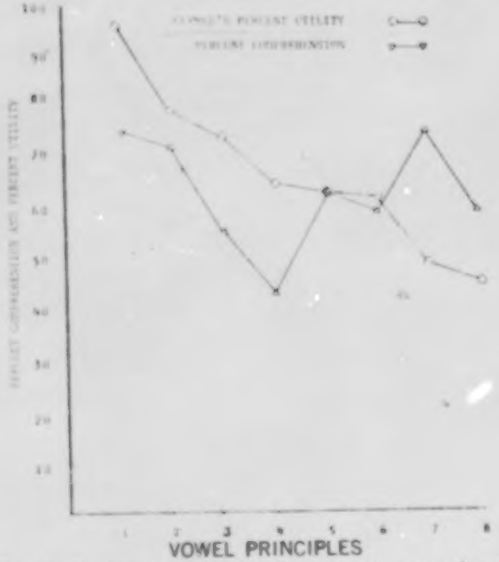


Fig. 2 Oregon State University percent comprehension

TABLE 7

COMPARISON OF PERCENT COMPREHENSION AND PERCENT UTILITY OF VOWEL PHONICS PRINCIPLES OF LAMAR STATE COLLEGE OF TECHNOLOGY GRADUATE STUDENTS

Principles Tested in Aaron's Test		Percent Compre-hension	Clymer's Percent Utility	Difference	S.E.	Z
1. Soft and hard *c*	(22)	70	96	–26	2.92	–8.90**
2. Vowel sound modified by *r*	(5)	64	78	–14	6.175	–2.29*
3. Vowels in open syllables	(3)	80	74	6	6.54	.92
4. Soft and hard *g*	(24)	49	64	–15	7.15	–2.09*
5. Short words ending in *e*	(4)	81	63	18	7.19	2.5 **
6. Vowels in closed syllables	(2)	70	62	8	7.35	1.10
7. Vowel *a* followed by *l*	(18)	82	48	34	7.45	4.56**
8. Vowel diagraphs	(1)	81	45	36	7.42	4.85**

N = 15 Graduate Students

The number in parentheses after each rule indicates the equivalent principle in Clymer's investigation

* Statistically significant at .05 level

** Statistically significant at .01 level

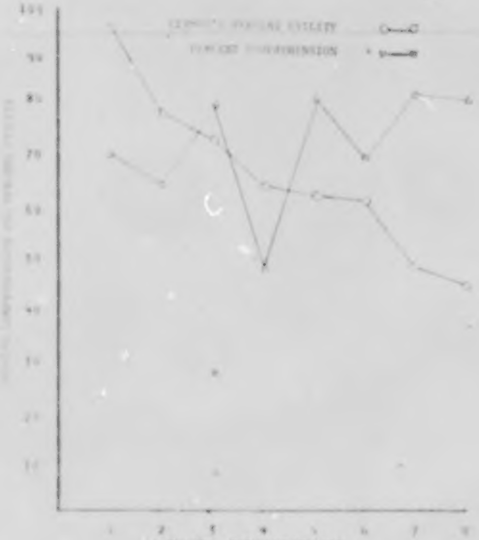


Fig. 3 Lamar Tech. graduate student percent comprehension

TABLE 8

COMPARISON OF PERCENT COMPREHENSION AND PERCENT UTILITY OF VOWEL PHONICS PRINCIPLES OF LAMAR STATE COLLEGE OF TECHNOLOGY UNDERGRADUATES

Principles Tested in Aaron's Test		Percent Compre-hension	Clymer's Percent Utility	Difference	S.E.	Z
1. Soft and hard *c*	(22)	65	96	–31	1.16	–26.80**
2. Vowel sound modified by *r*	(5)	62	78	–16	2.45	– 6.53**
3. Vowels in open syllables	(3)	60	71	–14	2.59	– 5.41**
4. Soft and hard *g*	(24)	39	64	–25	2.83	– 8.82**
5. Short words ending in *e*	(4)	72	63	11	2.85	3.86**
6. Vowels in closed syllables	(2)	53	62	– 9	2.86	– 3.15**
7. Vowel *a* followed by *l*	(18)	83	48	35	2.95	11.86**
8. Vowel diagraphs	(1)	64	45	19	2.94	6.47**

N=287 Undergraduate students

The number in parentheses after each rule indicates the equivalent principle in Clymer's investigation

* Statistically significant at .05 level

** Statistically significant at .01 level

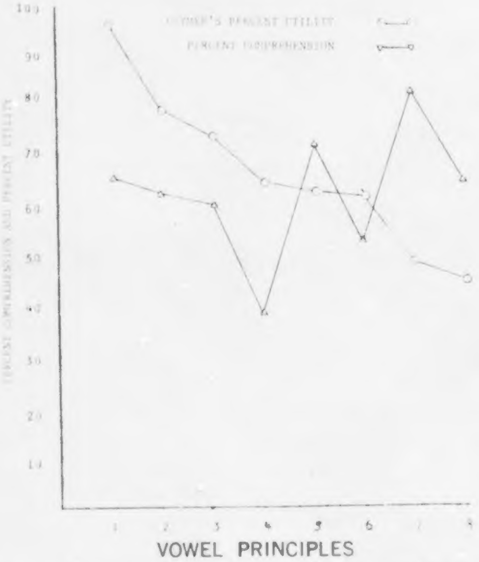


Fig. 4 Lamar Tech. undergraduate student percent comprehension

TABLE 9
COMPARISON OF PERCENT COMPREHENSION AND PERCENT UTILITY OF VOWEL PHONICS PRINCIPLES OF CULVER STOCKTON COLLEGE UNDERGRADUATES

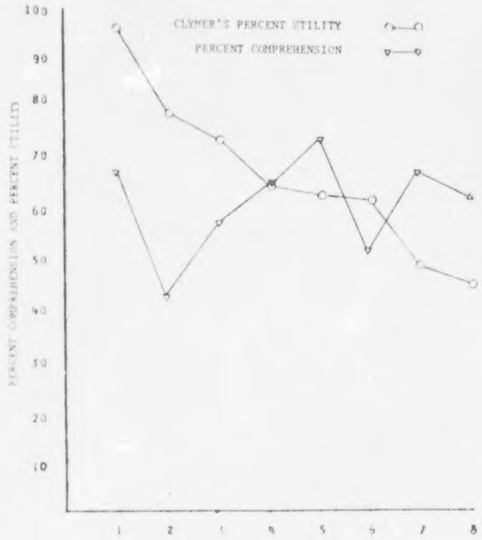
Principles Tested in Aaron's Test		Percent Compre-hension	Clymer's Percent Utility	Difference	S.E.	Z
1. Soft and hard *c*	(22)	67	96	–21	–13.85	–1.51
2. Vowel sound modified by *r*	(5)	43	78	–35	– 9.26	–3.77**
3. Vowels in open syllables	(3)	58	74	–16		–1.63 – 9.80
4. Soft and hard *g*	(24)	64	64	0	0	0
5. Short words ending in *e*	(4)	74	63	11		
6. Vowels in closed syllables	(2)	52	62	10	10.85	.92
7. Vowel *a* followed by *l*	(18)	67	48	19	11.17	1.70
8. Vowel diagraphs	(1)	62	45	17	11.12	.65

N=20 Undergraduate students

The number in parentheses after each rule indicates the equivalent principle in Clymer's investigation

* Statistically significant at .05 level

** Statistically significant at .01 level.



VOWEL PRINCIPLES

Fig. 5 Culver-Stockton College student percent comprehension

DISCUSSION

The significant differences between the 1957-59 and 1962-67 groups show that the 1962-67 teachers know more vowel phonics generalizations than they did in 1957-59. This increased knowledge does not seem unreasonable in view of the great pressures which have been exerted on teachers through mass media, new materials, and colleges.

The findings in this investigation appear to have some similarities to Spache's (24) reported mean phonics score of 45.0 for his experienced group of subjects which was higher than the 34.22 reported by Aaron (2). Unfortunately, it cannot be determined whether there is a significant difference between Aaron and Spache's test means. The mean score as reported by Spache suggests at least a small trend of improvement over Aaron's 1957-58 findings. Spache's findings may reflect elements of the trends reported in this investigation.

The preceding observations suggest that a replication of Schubert, Gagon, Farinella, and Ramsey's investigations should also show significant changes in the word-attack knowledge of teachers.

The regional differences may reflect relative degrees of influence that schools stress on phonics skills. Thus, the Texas group is considered to be on the periphery of the "Phonics Belt." Texas teachers may have been expected to learn and to stress more phonics than West Coast teachers, who in turn stressed more phonics than the Georgia group. It is a matter of record that Georgia Schools (1) are encouraged to spread out the phonics instruction more equitably through the first three years of the primary grades.

On the other hand, the Texas teachers reputedly consume greater quantities of primary materials which stress more massive phonics instruction in grade one. The previous observation is based on the opinions of reading methods professors who are familiar with reading programs in Texas.

The previous "advantage" of knowing more phonics is mitigated by the fact that teachers do not know the highly useful phonics principles as well as the less useful principles. Moreover, it appears that the less useful principles are comprehended more often than the more useful generalizations. All this suggests that much more emphasis needs to be placed on the usefulness of a rule when it is taught in college reading methods classes. Recent research by Clymer (8), Bailey (5), and Emons (11) should be standard readings for teachers in reading methods courses.

The implications of knowing the less useful phonics principles more readily suggest that they are taught more often. If, indeed, children are taught principles of low utility, one can only wonder how much frustration and waste of time results from vowel phonics principle instruction.

The great divergence between utility of principles and comprehension by teachers needs further investigation from several points of view. Research needs to determine more exactly how the mastery of a vowel phonics generalization is actually applied by a reader to decode a word. Introspective reports from children may be a way to determine how often various word-attack code breakers are used to decode words. There has not been much discussion of Clymer's findings on utility of vowel phonics generalization on the operational level. Positions taken by some authorities as Betts have not been in agreement with Clymer's percent utility findings for vowel phonics generalization. (6), (18).

Considering the time and effort it takes to teach phonics generalizations, the teaching of useless generalizations is a matter of utmost concern on all levels of instruction in our current reading situation. Teacher effort must be conserved for more worthy goals than the inapplicable phonics principles which can only result in unnecessary confusion in the minds of children.

FINDINGS

1. There is some evidence to suggest that there has been an improvement in teachers' knowledge of vowel phonics generalizations in the 1962-67 period as compared to the 1957-58 period.

2. There is some evidence to indicate that there are regional differences in teachers' knowledge of vowel phonics generalizations.

3. There is evidence to suggest that teachers comprehend the less useful vowel phonics generalizations better than the useful vowel phonics generalizations.

SUGGESTIONS FOR FURTHER RESEARCH

1. The charge that teachers of the 1957-62 period did not know phonics principles needs to be investigated systematically with the same and improved instruments on populations similar to Schubert's (20), Farinella's (12), Gagon's (14), and Ramsey's (19) tests to confirm or reject the conclusion of this report that there has been an improvement in the vowel phonics generalization of teachers.

2. There is a great need for scientifically designed tests of word-attack knowledge on the teacher education level.

3. The relationship between the high and low degree of teacher knowledge of word-attack skills and their influence on pupil improvement in reading comprehension and vocabulary needs to be investigated.

4. Teacher education institutions should conduct research dealing with the effectiveness of various types of programs purporting to teach future teachers word-attack skills.

5. Follow-up studies to determine the effectiveness of teacher education programs in relation to pupil improvement in reading comprehension and vocabulary need to be done.

6. The utility of vowel phonics principles needs to be researched under field conditions to determine how they are taught by teachers and applied by learners to decode words.

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Idiosyncratic Word-Association Among Adults at Divergent Levels of Reading Ability

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Geier (2) has shown that poor readers make less generalized and less frequently given responses with a word-association task than do good readers; and Cromer and Wiener (1) have reported similar results with a word-association task as well as with Cloze and story-reading tasks. A possible implication of such results is that perhaps reading disability is, at least to some extent, a function of the degree to which the individual gives idiosyncratic (nonconsensual) or inappropriate responses to verbal stimuli. A deviant pattern of cue elaboration that does not correspond to much printed material would, of course, cause difficulties. A subsequent study (3) was designed to determine whether good and poor readers would continue to differ in response consensuality when stimuli were limited to concrete nouns and pictorial representations of the nouns. The expectation was that perhaps idiosyncratic responding would be associated with verbal but not with pictorial stimuli, particularly among poor readers; but there was no support from the data. Good readers continued to respond more consensually with both sets of stimuli, and the pictures evoked more idiosyncratic responses from both groups than did the words.

Subjects in the previous studies were elementary school children. One unanswered question then, is whether differences in response consensuality that have been demonstrated with children exist among adults from different reading levels. One might argue, for example, that due to their broad and varied experiential backgrounds adults, regardless of their reading levels, will not differ in their word-associations because all will tend to respond idiosyncratically. This ought to be so particularly when the stimuli in the word-association task are pictorial representations of concrete nouns, i.e., when the reading task as such is eliminated. On the other hand, it might be argued that adults at the higher reading levels would tend to respond more consensually due to their wider verbal experiences and the consequent shaping of their patterns of cue elaboration.

In the present study adults from three widely separated levels of reading experience and ability responded to pictorial stimuli. The purpose was to examine further the generality of the previous findings with children. Specifically, the intent was to determine whether there are differences in the consensuality of responses to pictorial stimuli in a word-association task among groups of adults from three distinct reading levels.

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[1] The research reported herein was performed pursuant to a contract with the United States Office of Education, Department of Health, Education and Welfare, under the provisions of the Cooperative Research Program. Center No. C-03/Contract OE 5-10-154. The writers are grateful to Prenton Kellenberger and Albert Bertolas for their help in obtaining subjects at the Milwaukee Vocational and Adult School.

Method

Subjects. Once the decision to compare the responses of adults from three widely divergent levels of reading skill and experience was made, the approach was to select subjects from among groups of adults operating in settings that by their very nature require divergent levels of reading skill and sophistication. Accordingly, 15 subjects were chosen at random from each of the following groups: an adult basic education class, where the enrollees were receiving basic literacy training and were, by definition, reading below a third grade equivalency level; an adult vocational school typing class, where the enrollees were operating at a high school equivalency level; and a university class, where most of the students were at the graduate level.

Materials and Procedure. The stimulus pictures were the same as those used in a previous study (3) with elementary school pupils. Briefly, the set of materials comprised 25 black-and-white line drawings of common objects (See Table 1) that were chosen from a larger pool because they were known to evoke associations readily and to be reasonably ambiguous.

Table 1

Stimulus Nouns Used in the Study

anchor
apple
bone
camel
doll
elephant
frog
goat
grasshopper
hog
kitten
knife
onion
pillow
rabbit
rattlesnake
rose
sheep
skunk
slipper
snail
star
telephone
tree
wheel

Each drawing was presented on a 5½" x 7" card. The examiner held up the stimulus cards successively to expose them to small groups of subjects. The stimulus objects were not named by the examiner. Subjects were instructed to write the first association that occurred to them, but to avoid simple names for the objects. Two proctors in addition to the examiner were present to help the adult basic education students spell their responses. Sufficient time was allowed for all subjects to put down a response to each object.

Assignment of Frequency Scores. Cromer and Wiener arrived at frequency, or consensuality, scores by establishing the frequency of each association within their group of good readers, who were designated control subjects, and then scoring the responses of both good and poor readers on that basis. That is, if 10 of the good readers responded "smelly" to the *onion* stimulus, each subject who gave that response was given 10 points; but if just one subject responded "mustard" he was given one point. In the more recent study by Otto the reasoning was that there might be consensuality among poor readers within their own group, so responses were scored both according to the Cromer and Wiener paradigm and on the basis of consensuality among all subjects.

Although the revised scoring scheme did not result in significantly different findings, the decision was to use two scoring schemes with the present data due to the continued possibility of within group consensuality. Accordingly, each subject's responses were first scored with the university group serving as a control; then each subject's responses were scored with his own group serving as the control. A consensuality score, then, was the total points accumulated by an individual on the 25 item list; and each individual had two scores, one from each scoring scheme.

RESULTS

Mean consensuality scores obtained by each group when the University group served as the control and when the Vocational group and the Adult Basic group served as their own controls are given in Table 2, where the results of t-test (one-tailed) comparisons of all means are summarized.

Table 2

Mean Consensuality Scores for Each Group by Scoring Scheme (in Parentheses) and t-Test Comparisons of All Means

	Vocational		Adult Basic	
	Own Control	University Control	Own Control	University Control
	(66.87)	(57.20)	(55.47)	(39.40)
University (85.73)	2.57••	3.73•••	4.09•••	5.61•••
Vocational: Own		1.59	1.98•	4.02•••
Vocational: University			.28	2.48••
Adult Basic: Own				2.33•

• < .05
•• < .01
••• < .001

The mean consensuality score of the University group differs significantly ($p < .01$ or better) from the mean scores of each of the other groups regardless of the scoring method employed, but the difference is smaller for the scores derived when the Vocational and Adult Basic groups served as their own controls. There are also significant differences between the Vocational and Adult Basic groups' mean consensuality scores derived from the University control scoring scheme ($p < .01$) and from the within group control scoring scheme ($p < .05$). Finally, there are significant differences between the Adult Basic group's University control mean score and the Vocational group's own control mean score ($p < .001$) and the Adult Basic group's own control mean score ($p<.05$). Taken together these results clearly demonstrate a decrease in consensuality from the University to the Vocational to the Adult Basic group that is consistent within each scoring procedure.

DISCUSSION

At the outset, it seems necessary to take explicit note of the fact that the groups studied undoubtedly differ in many ways in addition to their exposure to and ability in reading. Specifically, there is every reason to suspect that there were between-group differences in general intelligence and experiential backgrounds. Yet, the reasonable expectation on the basis of these differences would be exactly the opposite from the demonstrated findings: higher intellectual levels and wider, more varied backgrounds of experience should be accompanied by broader and more varied response repertoires and, as a result, more idiosyncratic associations. The point, then, is that the present results with regard to response consensuality were demonstrated in spite of a variety of factors that would seem to make for fewer consensual associations among adults from progressively higher education levels.

A defensible explanation for the results seems to be that adults from higher reading levels may respond more consensually because of their background of reading experiences and the consequent shaping of their cue elaboration patterns. If such an explanation is accepted, then the implication would seem to be that increased reading skill and sophistication is a cause for consensual responding. This is the converse of the cause-effect sequence implied in the suggestion that one cause for poor readers' problems may be their deviant pattern of cue elaboration, which is ostensibly reflected in their tendency to give more idiosyncratic responses than good readers.

On the other hand, it has been noted (3) that there may be only a secondary relationship between consensual responding and reading ability: good readers may simply be better able than poor readers to adapt their responding to perceived task constraints. That is, given a test-like situation good readers may tend to give consensual responses because they make certain assumptions about the task requirements, and attempt to give "acceptable" responses; such an ability to adapt to perceived task requirements would also be instrumental in building skill in reading.

In any event, children who are poor readers and less sophisticated adult readers do tend to respond idiosyncratically. Perhaps the immediate implication with potential usefulness for remedial teachers and literacy instructors is that their pupils would probably benefit from instruction designed to enhance consensual responding (e.g. practice with deleted word type exercises, wide exposure to words in context through both personal reading and listening, and, possibly, tachistoscopic drill in instant word recognition). Such a procedure will not, of course, resolve the cause/symptom dilemma, but action research should determine whether the procedure pays off in terms of increased reading ability.

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The Enigma of the Survey Section of the Diagnostic Reading Test

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This paper is concerned with the equality of the results obtained with Forms A, B, C, and D of the Survey Section of *The Diagnostic Reading Test* for Grades 7 through the College Freshman Year (hereafter referred to as the DRT) when: (1) Form A is used as a part of a battery of guidance tests administered to all students prior to admission to Saint Petersburg Junior College (hereafter SPJC); and (2) when Forms A, B, C, and D are used to survey the needs and progress of students enrolled in a course in "Reading Techniques." This paper is also concerned with the puzzle of both mediocre and high correlations and the baffling matter of many negative scores, and with the pressing need for a reading test that will yield equivalent results in several different situations.

Background. Briefly, SPJC is a public, open-door institution with a current enrollment of over 9,000 students on two separate campuses, one in Saint Petersburg, and one in Clearwater. Both campuses offer two different reading courses, a basic, non-graded, three credit course in the Department of Directed Studies for those in serious need of remedial work, and a more advanced, one semester, three credit, college level, developmental "Reading Techniques" course that has been offered by the English Department for many years. It is with the latter course that this paper is concerned. It should be noted at this point that public junior colleges in Florida are not staffed or equipped to do research, nor is it consistent with their policy that the faculty do so. Teaching comes first. However, this writer believes that teachers must do such study as is necessary to determine whether working materials are suitable for a particular classroom situation. This paper, then is not so much research, but rather a recitation of "happenings" in (1) the SPJC Testing Service, and in (2) the writer's "Reading Techniques" classes on the Saint Petersburg campus. Data cited are derived from use of the DRT in these two areas.

Furthermore, DRT Forms A and B were used at the beginning and end of terms by the SPJC English Department for over seven years. Results of testing during this period were quite consistent and there was little question as to their reliability. Also, the results of tests, in the writer's classes, have been habitually graphed in order to show distribution of students along a percentile scale, to indicate where work in classes should begin, to show end-of-term differences, and to give quick overall, practical appraisals in a school situation that did not permit of a more sophisticated approach.

In 1963, however, the SPJC Testing Service, in replacing an outmoded reading test, adopted From A of the DRT as part of the battery of guidance tests. This move was considered advisable as it was believed that this would give both the counselors and the various reading teachers the same kinds of test data and that it would result in more meaningful communication between the several groups. This change forced the "Reading Techniques" classes to drop the use of Form A as it was not considered realistic to use the same form repeatedly for the same students. Hence, Forms C and D were added to Form B for use in the reading classes.

With this change to Forms B, C, and D, changes in test results also began to appear in the "Reading Techniques" classes, not only in the writer's data, but in the results obtained by other teachers as well; and these changes seemed to be influenced by the order in which the tests were given. If, for example, Form C was given at the beginning and Form B at the end of the term, Form C would show many scores below the 50th percentile range and Form B would show some appreciable gains and a more normal distribution. However, if Form B was given at the beginning and Form C at the end of the term, scores would peak up in the 26th to 50th percentile range with Form B, and then Form C would show negative results with an increase in scores falling in the 00 to 25th percentile range.

For example, with the B/C sequence, DRT scores for one term showed at the end of the term that 53 percent of the students had a loss in vocabulary, 61 percent had a loss in comprehension, and 59 percent had a loss in total comprehension scores. As a minimum, even if there had been no teaching, or if the course had failed to follow the curriculum designed for use with the DRT, it might be expected that scores would be more nearly equitable.

These changes in test patterns raised a number of serious questions among the reading teachers: After so many terms of consistent results, why these differences in test scores? After all the hard work *in* the course, had students suddenly failed to mature and develop, or were they—for some unknown reason—simply lacking in learning capacity? Were the course materials out-of-date, or now inadequate? Were the teachers themselves somehow at fault and out-of-date in their methodology, or personally in interaction with the students? Why were so many negative scores now appearing at the end of the term if the various forms were indeed equitable? Finally, were the tests in some way at fault, or being used incorrectly; or were there other problems that had not been recognized?

Examination of these questions resulted in the following conclusions:

1. Students' grades in the "Reading Techniques" classes remained normal and based on in-class written work, term papers, text workbooks, in-term and final teacher-designed examinations, and the like. The Grade Point Average had maintained a consistent mean of 2.06 over several years (4.00=A).

2. There had been no radical change in the course, and the several reading teachers, while alert and receptive to new ideas, had followed much the same pattern and sequence of instruction and were experienced and consistent in their presentations and in testing; student morale and interest—past and present—had remained high; and there was subjective evidence (e.g., students and returning graduates comments, comments from counselors and instructors in other disciplines) that the course had an excellent reputation.

3. The college population was (and is) relatively stable as to type and kind of student enrolled; there had (and have) been no radical changes in the area the college serves; and, consequently, there was (and is) little variation in quality or in kind in all classes. This is substantiated by two kinds of statistical evidence.

a. Ability Profiles based on SCAT (i.e., Cooperative School and College Ability Test) Scores, compiled by the SPJC Testing Service, show no significant difference between student's ability from year to year; and

b. Local Norms for DRT Form A, based on 6,538 applicants to SPJC and tested in 1964 and in 1965, compared with the DRT publisher's Norms[2] are very closely parallel and show no significant differences.

4. Therefore, since the change in test results did not seem to be the result of a change in the student body; and since the course materials had not been markedly changed nor revised; and since the teachers' methodology had remained much the same; and since no other problems were plainly visible, the only thing left to examine more closely was the test results themselves.

A Plan. As a consequence of the foregoing, this writer decided to begin a two year study of DRT results by giving Form C at the beginning and Form B at the end of the terms for the school year 1964-65, then reversing this and giving Form B at the beginning and Form C at the end of the terms for the school year 1965-66. Additionally, Form D was added at the end of 1965-66 and given one class after Form C was given. Further, to obtain some degree of homogeneity, test scores were compared only for those regular session day students who had completed the "Reading Techniques" course and for whom all scores were available. Also, during the entire period of the study the same textbooks, mechanical devices, classwork, and pattern of teaching were maintained. All terms were of the same duration so that class time remained constant, i.e., fifteen weeks with three 50-minute periods per week exclusive of final examinations.

Graphing and Tabulation of Results. Test scores were plotted on graphs—for reasons stated earlier in this paper—and were also tabulated. *First*, the graphs showed significant differences in the scores obtained with different forms of the DRT. *Second*, inspection of individual scores also showed significant changes, some of them negative. *Third*, comparing all scores for sixty-three students who took Form B at the beginning, and who also took Forms C and D one class apart at the end of the term, the number (percentage) of students who showed a loss, no change, or gain in scores is as follows:

Date and Sub-Test	N*	Loss	No Change	Gain	Total
Form B:					
±6 January 1966 (beginning of term)	63	———	———	———	———
Form C (end of term)					
±12 April 1966	63				
VOCABULARY		-70%	5%	25%	100%
COMPREHENSION		-62%	*10%*	28%	100%
TOTAL COMPREHENSION		-65%	*10%*	25%	100%
Form D (end of term)					
±13 April 1966	63				
VOCABULARY		-45%	*12%*	43%	100%
COMPREHENSION		-38%	*15%*	47%	100%
TOTAL COMPREHENSION		-38%	*12%*	50%	100%

* Identical students participated in all tests.

The next questions followed naturally: If the graphs and the tabulations showed such end-of-term differences, which test form scores should a teacher accept, C or D? And what would the correlations be on these and other tests where data were available?

Therefore, data were assembled, scattergrams were constructed, means were derived arithmetically, and correlations were computed on the basis of the Pearson Product Moment Method. In addition, the Standard Error of Reliability of the Correlation was computed, using the formula $\sigma = \frac{1-r^2}{\sqrt{N}}$. Means and correlations are shown in the chart that follows. It should be noted in Part A of the chart that the first three correlations (r_1, r_2, and r_3) are for test/re-test situations and that *no* teaching had occurred between the times of testing. On the other hand, and included as a matter of interest and comparison, Part B of the chart shows means and correlations for tests given at the beginning and end of the course in "Reading Techniques." The data are as follows:

CHART—MEANS and CORRELATIONS, DRT Forms A, B, C, and D

Part A: Test Re-test, Means and Correlations

r	FORMS	Nr.* Stu.	Date of Tests	Means (M) Compared	CORRELATION (r) & RELIABILITY
r_1	A vs. B	83	See Note 1	63.64 vs. 59.24	$r_1 = .53 \pm .08$
r_2	A vs. B	85	See Note 1	64.12 vs. 65.21	$r_2 = .76 \pm .05$
r_3	C vs. D	63	See Note 2	61.02 vs. 64.52	$r_3 = .84 \pm .04$

Part B: Tests Given at Beginning and End of Term, i.e., Before and After Instructions

r	FORMS	Nr.* Stu.	Date of Tests	Means (M) Compared	CORRELATION (r) & RELIABILITY
r_4	C vs. B	83	See Note 3	59.24 vs. 66.81	$r_4 = .64 \pm .06$
r_5	C vs. B	80	See Note 3	58.55 vs. 65.24	$r_5 = .74 \pm .08$
r_6	B vs. C	85	See Note 3	65.21 vs. 62.81	$r_6 = .75 \pm .05$
r_7	B vs. C	63	See Note 2	63.49 vs. 61.02	$r_7 = .82 \pm .04$
r_8	B vs. D	67	See Note 2	63.49 vs. 64.02	$r_8 = .87 \pm .03$

* Identical students participated in each group of tests each term.

Note 1: Tests were given prior to the beginning of school by the SPJC Testing Service, and in the first week of the term in the "Reading Techniques" course for r_1 for Term I, 1964, and for r_2 for Term I, 1965, respectively.

Note 2: Tests for r_3 were given one class apart at the end of Term II, 1966. Tests for r_7 and r_8 were given to the same students as r_3, but at the beginning and end of the same term.

Note 3: Tests were given in the "Reading Techniques" course at the following times: r_4, Term I, 1964-65; r_5, Term II, 1964-65; and r_6, Term I, 1965-66.

Statisticians may find it of interest to note the difference between the Means (M) for all the correlations. Arithmetically, the means range from 58.55 (r_5) to 66.81 (r_4) with a difference between forms from almost *two-and-a-half* (2.47) to over *eight* (8.24) points with one exception where the difference is less than one (.69) for Form C vs. B (r_4 and r_5).

Comparison of time of testing and the resulting correlations is also of interest. Looking at the data in the test/re-test situation where scores were obtained prior to school and at the start of a term, and again one class apart at the end of a term, one would expect to find the higher correlations where there would have been little or no change in student experience and training. Conversely, one might expect to find the greatest difference and the lower correlations between the beginning and end of a full term of instruction when it could be anticipated that student behavior had been modified and that they had had an opportunity "to grow an inch or two." The results, however, are at variance with the anticipations: Where one expects to find the highest correlation, one finds both the lowest (r_1=.53) and one of the highest (r_3=.84); and where one expects the lowest, one finds some of the highest (r_7=.82 and r_8=.87).

This is indeed an enigma! Why should Forms A/C give such a low correlation in comparison with other pairs? Why should Forms

B/C, B/D, and C/D correlate so highly, yet show such disturbing losses when the scores are compared and tabulated for individuals? Unfortunately, in searching for objective data to guide the teacher who wishes to give a pre- and post-test to survey the needs and to obtain some indication of the progress of students in a developmental reading course, only a limited number of published items can be found. As Kingston pointed out,[3] the appraisal of reading skills is one of the most fundamental difficulties with which the reading teacher is plagued.

One study by Bliesmer and Dotson in 1956 made a one-term investigation with a limited number of students (55 and 49 respectively) "to determine the degree of comparability for Forms A and C and Forms B and C."[4] Their correlations for "Total" scores were:

Forms A vs. C, r=.84; and B vs. C, r=78. For comparison, computations for this paper showed–

Forms A vs. C, r=.53; and B vs. C, r=.75 and .82. Bliesmer's and Dotson's conclusions, so far as they apply to this paper were:

"1. Neither Forms A and C nor Forms B and C are comparable when the tests are considered in their entirety."

2. Deals with rate and is omitted.

"3. For Forms B and C neither the total tests nor any of the subtests are comparable."[4]

It is the opinion of this writer that the range of correlations between Forms A, B, C, and D (.53 to .87) is too great for tests that supposedly give equivalent values. Again, the great discrepancy between correlations and the results shown by tabulating is very puzzling and disturbing when one considers that the three forms that gave the highest correlations also showed gross difference in individual scores for individual students. One cannot but wonder whether correlations and percentile scores are acceptable indicators for showing equivalence between forms for these particular kinds of tests.

In fact, the writer and the SPJC Director of Testing (Miss Rose Mary Ammons)[5] both feel that some weighted factor needs to be added to the scoring of these tests. The available data give significant and positive correlations, evidence that there is a degree of relationship between the test scores, and that a student who scores in a certain range on one form of the test will probably score in a similar or parallel position within his group taking another form of the same test at the same time. Perhaps a corrective factor for the tests, or a conversion of results to *Standard Scores*, would resolve the problem of obtaining data that would indicate valid gains or losses. This idea is not new, although arrived at independently by the writer and Miss Ammons. Bliesmer and Dotson said much the same thing in their conclusion in their investigation, stating, ". . . in view of the relatively high relationships found between scores with each two sets of forms, there might be determined a correction factor which would permit viewing differences between obtained scores as valid indications of gains."[1]

However, Kingston, in several papers[6,7,8] and Bliesmer and Dotson[1] are pessimistic about the value of the DRT as a diagnostic instrument, and these writers urge caution in its use as a pre- and a post-test for determining gains effected in a college reading program. Further, Kingston also criticizes the diversity of the DRT for a range that includes seventh grade through the college freshman year. He points out the great difference between seventh graders and college freshmen in physical, emotional, and mental maturity and that for college evaluation "the college freshman group represents the highest extreme of the range. This condition results in an extremely 'low ceiling' . . . which prevents an adequate comparison of higher reading skills of superior and inferior readers."[3] As far as this is concerned, it is SPJC's experience that some students read below the seventh-grade level, and some first-year college students read above the college freshman year, and a test or tests are needed that will measure meaningfully the entire range of reading encountered with college freshmen as well as with adults in the continuing education program.

As Dr. Triggs, one of the principal persons concerned with Diagnostic Reading Test development recognized—"one of the chief reasons why reading procedures are so seldom evaluated and why reading performance is not more often and more carefully analyzed is the scarcity of reliable and valid instruments on which to base judgments."[9] This is the crux of SPJC's enigma. There is no reading test on the market that will meet the needs of the college. Tests with comparable scores are needed by the Testing Service and the counselors; they are needed by the Directed Studies reading courses at the beginning and end of a term as well as additionally for those students who must continue their remedial work; and they are needed by the developmental "Reading Techniques" course in the English Department to measure students' reading capabilities at the beginning and end of the term. This means that there should be at least eight forms of the same test, and they all ought to be measurable by the same yardstick so that tests results would have the same meaning for all concerned. The only test that comes even close to meeting this need is the DRT with its multiple forms, A through H. Additionally, the length of the DRT and the make-up of its various sections or subtests, including the obtaining of the rate of reading have several desirable features that are liked by many (including this writer). Unfortunately, SPJC's experience with the equitability of Forms A, B, C, and D of the DRT is such that the college does not now have confidence in the test. It is hoped that this will be remedied and SPJC has, in fact, furnished the Committee on the DRT with thousands of test scores which it is hoped will provide measuring instruments that more adequately meet the needs of secondary schools and colleges.

Finally, there appears to be little meaningful relationship between a *reading* test published by one source and another *reading* test published by someone else. This is a problem where multiple forms are needed and for the busy counselor and the teacher who have an immediate requirement to guide and place a student in a class. For example, this writer gave one class in "Directed Studies" *The Iowa Silent Reading Test*, Form Am, in the beginning of the current term. The highest percentile rank for Total Score for any individual was 34. A few days later *The Nelson-Denny Reading Test,* Form B, was given to the same class. The highest percentile rank for Total Score for any individual this time was 61; but the student who made 61 on the Nelson-Denny achieved only 24 on the Iowa test. Additionally, earlier this year, the SPJC Director of Testing made one brief study on the comparability between the Davis Reading Test, The Nelson-Denny Reading Test, and the DRT. Tests were administered at the beginning of a semester, prior to any training in reading, and correlations were computed on the basis of the Pearson Product Moment Method. The results were as follows for speed and comprehension:

Nelson-Denny vs. Davis; N=78:
r=.14 for speed, and
r=.54 for comprehension.
DRT vs. Davis; N=71:
r=.30 for speed, and
r=.31 for comprehension.

These are small samplings in a single situation, but they are at least indicative that tests by various publishers are not compatible to the extent that they can be used interchangeably. In fact, when one considers the differences between test scores obtained with the various instruments, all of which carry the title "Reading Test" and which are purportedly for approximately the same grade levels, one wonders what *is* being measured!

Somewhere in the past several years, this writer is of the impression that someone published a statement to the effect that there had been nothing new published in a usable quantity in the field of reading tests for over twenty-five years. If this be true—and the facts indicate that it is, since there is nothing on the market in a sufficient number of forms to answer the needs of secondary schools and colleges—it would seem that in this modern age of computers and advanced research that is able to plan to put a man on the moon, or even further afield, something more than criticism (such as this paper) and separate, un-coordinated academic studies would be possible. It would seem that there is, or could be with a little foresight and planning, a great deal of raw data on tap in the many testing programs carried on throughout this country. Data that could be collected, collated, and evaluated to produce satisfactory instruments for the measurement of reading. Then, instead of the present hodgepodge of several differing yardsticks that supposedly measure the same thing, it should be possible to produce, in quantity, measuring devices for reading that would give equitable and comparable results in several situations. This task, obviously, is beyond the scope and capabilities of the lower schools and junior colleges. The people of these institutions have the enigma of the several reading tests and their results very much on their hands, and like Br'er Rabbit and the Tar Baby, they are stuck fast with it. These people suspect, also, that many of the upper-level schools have tar on their hands too. Hopefully, however, the upper schools or some research organization will be able to do something about it.

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The Developing Climate for Reading Research: Programs versus Projects

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Harper Lee's novel, *To Kill a Mockingbird*, offers us a rare opportunity to be children again, to share in all the trials and mysteries of growing up in a world badly run by the Others, the adults. Scout Finch, a little Alabama girl, tells the story with embarrassingly accurate perception of adult foibles and her first day of school gives a particularly good example of the superiority of children's wisdom. Somehow, Scout had learned to read long before she entered school—and she had learned to love reading. When the teacher discovered this precocious behavior, she was horror-struck. Someone had interfered with the educational process by teaching Scout to read before her sixth birthday. The little girl who should have to struggle with the letters of the alphabet could read aloud the stock-market quotations from *The Mobile Register!* In order to undo the damage, the teacher forbade Scout to read except in class. In an earnest conference that night, Scout told her father what had happened and swore that she would never go back to school. They agreed to a compromise—they would continue the beloved reading sessions and Scout would return to school and "play dumb." The story goes deeper than this paraphrase, though, because Scout realized that reading was as natural to her as breathing. She could not remember *not* being able to read and had taken the joy of reading for granted until she was threatened with losing it.

The point of all this is that Scout has set an educational objective, one of the highest ever set: children should learn to read as easily as they learn to walk, or to speak, or to feed themselves. After all, our environment demands more than ever that we read while we are still very young.

Everyone will agree that we cannot count on next year's crop of first-graders to be fluent readers when they arrive at school. If we knew more about reading, however, we might eventually make reading an easy subject instead of one that frustrates teachers and pupils at all levels, kindergarten through post-doctoral. Since we do not know enough about reading to make it an easy subject, we shall have to rely upon scientific research to increase our knowledge.

Before we can use research to answer questions, though, we must question ourselves. Precisely what do we want to know? Obviously we want knowledge that will help us teach children to read. But this is not precise: do we want knowledge about teaching practices, about reading texts, about the linguistic features of the English language, about children's abilities to learn? Let us try a more fundamental question, one more direct than questions about teaching methodology or curricula: *By what process do people read?* There must be a process because reading is an orderly, systematic activity. Perhaps different people read by different processes, but surely there are some specific perceptual, neurological, psychological, and cognitive steps that occur in common. If we look closely at people who read well, we should be able to observe and understand each step that contributes to the reading process. And then, once we understand the act of reading we can design teaching practices and materials that respond to established facts about reading.

Now let us examine the factors that will help us answer our research question, "What is the process of reading?" The history of reading research and the present state of our knowledge suggest that we will need a clear focus on reading as a process that is acquired through learning; leadership to provide objectivity, cohesion and continuity; responsible marketing of our services as researchers; and long-term programmatic funding for scientific investigation of reading.

FOCUS—THE READING PROCESS

If any one factor has inhibited the progress of reading research, that factor has been the lack of a clear focus that would permit sound theory building. When the medical community focused on polio, they first identified the guilty bacteria and *then* learned to control it. Meanwhile, reading research attempted to develop a large variety of classroom cures without first doing the basic research that would systematically explain the act of reading.

Past failures and past successes converge to show that a focus on the reading process promises to be a productive one. First, we know such a process exists because people do read; we are not focusing on a phenomenon that may disappear under our scrutiny. Next, the focus is broad enough to accept everyone's contribution, but narrow enough to be manageable. Third, since we are proposing to break new ground, we can all approach this new question without pre-conceptions or biases. Fourth, the talents and resources that are now available can begin the work that we propose and direct it towards sure productivity. Most important, even before we understand the accomplished act of reading, we shall understand important, single steps in the process. Expecting these sorts of interim findings, we should be able to improve research planning and teaching strategies as discoveries are made.

LEADERSHIP

Along with a lack of focus, a lack of leadership has retarded progress in the field of reading research. A leadership that will evaluate research findings on their scientific merit alone must emerge. The field has had dozens of authorities who possessed considerable power, but no leaders who could move issues beyond the argument stage of "yes, it is; no, it isn't" to obtain answers which have their basis in observable *fact*. What man, or what organization shall lead? Of course, we do not know—but we can describe the kind of leadership we shall probably need.

Aside from many other obviously desirable qualities, we shall need leadership that prizes intellectual honesty and scientific objectivity. In a field as potentially controversial as ours, these values are the only alternatives to chaos. Further, the leadership must be prepared for a long voyage—provisions must be made for stability and continuity over a period of many years. In this country, we choose our leaders by the democratic process—even when no election is held. Surely, the professional organizations interested in reading will do their utmost to insure that professional issues are arbitrated by the most competent men, not necessarily those with the loudest voices.

MARKETING OUR SERVICES

It is not enough for reading research to be considered an abstract "good" when we can demonstrate specific contributions to the economy and to the fulfillment of human beings. When support for research is hard to obtain, we are all inclined to gnash our teeth and mutter about an apathetic public. Instead, we should be asking, "Who knows enough about our efforts to be convinced of their value?" Questions about reading have remarkable popular appeal, as witnessed by the attention given them by the newspaper and magazine editors. While reading research might not be called an emotionally appealing issue, it can be made logically appealing by getting some facts before the public. The vital fact that is seldom presented to the public is that our present reading instruction is not based entirely upon empirically established knowledge and that many years and many dollars will be needed for the huge research task that confronts us. A few communities are aware of the necessity of research, but many more communities wait to be convinced. Let us build a national case for reading research that is as compelling as the case built for polio research by the March of Dimes.

Marketing *our* product is not huckstering if it is done honestly. We wish to contribute to a need that is not accurately perceived by the public; we must face the fact that the task of informing the public is ours and ours alone.

THE NEW FORMAT—PROGRAMMATIC RESEARCH

For a host of reasons, most research in reading has been conducted in individual projects, each testing one or more hypotheses. These projects have typically involved an investigator and one or two graduate students, or a state reading specialist and several teachers. Budgets have usually provided for little more than staff salaries and modest efforts at dissemination. Most important, the project format has tended to constrain each researcher to a vacuum, remote from cross-fertilization by ideas from disciplines other than his own.

In the future, research in reading will be performed in a programmatic format. A research program is distinctly different from a research project in several ways. A program attempts to solve a problem: it is solution-oriented, and it is staffed and equipped accordingly. In a research program, we would expect to find staff members with experience in many related fields, possibly as many as twenty different disciplines in the case of reading research. The collaboration of the staff members and the more flexible format give programmatic research a dynamic dimension of creativity not usually found in project research: proposals can be developed quickly and competently to meet needs as they arise; crucial experiments can be simultaneously replicated to insure that the findings are valid; an unprofitable line of investigation can be revised before a great amount of time and money are lost; the training of junior staff can be coordinated, accelerated, and deepened by the wealth of talent present among the senior staff. Best of all, new research management tools like the Program Evaluation and Review Technique (PERT) and the Program Planning and Budgeting System (PPBS) can be employed to make sure that flexibility and creativity are built into a program from the start.

There have been a number of recent occurrences that lend some support to the prediction that the amount of programmatic research will soon increase. First, research questions seem to be getting bigger, to demand more staff and more money. For example, the Coordinated First Grade Reading Study conducted by Guy Bond and Robert Dykstra reports that

> There are many pupil characteristics related to the success children have in beginning reading . . . a fair amount of the variation in pupil success can be accounted for by the attributes brought to the learning situation.
>
> . . . Future research might well center on teacher and learning situation characteristics rather than method and materials. (1)

These findings forecast a much broader approach to studies of beginning reading: instead of concentrating only on teaching methods, future research will examine the interrelationships present among pupil and teacher characteristics, the learning situation, and the methodology and materials.

Next, Jeanne Chall's new book, *Learning to Read: The Great Debate*, presents a well-documented and persuasive argument for research that will build a sound theory on the process of reading. (2) The book merits everyone's attention for its scholarship and reasoning, but even more for the guidance it offers the researcher as well as the teacher. Since project research has not built the sort of theory we need, it seems likely that we will now attempt theory-building through programmatic research.

Third, Harry Levin's Project Literacy at Cornell University is nearing completion. This is a research program according to the characteristics we have already outlined, one of the very few ever conducted. Supported by the U.S. Office of Education, this program is attempting to design beginning reading texts that are based entirely upon research findings rather than upon unsubstantiated theory. (3) The texts, the body of basic research, and the program management techniques developed in Project Literacy will provide a rich source of information for future programs to draw upon

Fourth, we have a growing national interest in dyslexia and related reading disabilities. There have been a dozen articles on dyslexia in leading news magazines over the last year and scores of articles in the newspapers. A research conference held last May at Southwest Texas State College specifically recommended a national study of the problem. (4) It seems likely that a research program, involving many schools and universities, many fields of scientific study, and many converging approaches to the problem may result from the conference's recommendations. This program, should it materialize, could automatically elicit another program that would examine research findings on dyslexia for possible contribution to our knowledge of the reading process in normal readers.

And fifth, planning efforts within the Office of Education are now recognizing the advantages of the programmatic format. In addition to the Research and Development Centers and the National Laboratories, the Office has funded a research program on early childhood education and has invited bids for a research program on teacher education.

CONCLUSION

The objective we have set is a high one: learning to read should be easy. The investigations that promise to satisfy that objective will focus upon the complex process of reading in an attempt to explain all of the steps that make up the process. By choosing the best available intellectual leadership and by earning the public's enthusiastic support through honest marketing, we shall insure that future research in reading is generously financed. The scientific study of reading is ready to take a giant step forward and multidisciplinary research programs will be the Seven League Boots that carry us into the future.

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Psychotherapy and Learning Problems: The Role of the Clinical Psychologist

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In a previous paper, I suggested that thinking processes, as well as the process of comprehension, are affected not only by the intellectual factors involved but also by emotional aspects; and, more specifically, that there is a close interdependence of emotional and intellectual factors in any thinking or comprehension situation. This certainly applies to the elementary school level, but, if anything, it is even more relevant to the learning processes involved in college studies.

All of us are quite familiar with the turmoil of so-called "normal" adolescence and early adulthood. But we are now living in an era in which there is a true exacerbation of those characteristics which have always been associated with that period. The youngsters of today are more rebellious, show more by way of contradictory feelings, show a more intense questioning of values and ideals, and more changing and volatile emotions. Increasing numbers of college students are having great difficulty in pulling things together and reconstituting their personalities on a firm basis. Away from home at college, formerly fine students are bored and unmotivated, fail to fulfill academic requirements, and argue the meaninglessness of existence. Instead they settle into a pattern of achieving continuing "immediate" happiness by keeping almost uninterruptedly "turned on" with marijuana. After a time even this seems to lose its effect, and they start searching for another way to "turn on." The pervading problem which appears to dominate the psychological picture is a search for identity. In some, this is a critical, almost panicky need to define in some tangible way who and what they are. In others, there is a despairing abandonment of the search, resigning themselves to a vague existence bordering on nothingness. Some actively reject any of the generally accepted values; others plead that they have nothing that they can fall back on in the way of a value system. Any kind of structure or organized pattern of daily living is absent. It is as though there is nothing to keep them going in some kind of social adjustment, if only at a minimal level, while they are working through developmental problems.

With the increasing incidence of these kinds of problems, all of which may very well interfere with the learning process, the role of the clinical psychologist is brought into sharp focus. One can no longer think of the isolated academic situation, of specific educational skills and techniques per se; rather one must look at the college student as a physical organism functioning in a social environment, in a psycho-

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logical manner. This is not to ignore the obvious necessity of developing and refining better methods of instruction; but, at the same time, we must remain cognizant of those factors which will interfere with the learning process directly or indirectly.

The major focus of my discussion will be on the role of the clinical psychologist as psychotherapist in his attempts to deal with those psychological factors which interfere with the student's ability to learn or to utilize his skills most effectively in the academic environment. However, before considering psychotherapy per se, let me speak of the responsibility of the psychologist as one contributor to the diagnosis of the student's learning difficulty. It is my firm opinion that before anyone is taken into psychotherapy an extensive psychological evaluation be made in order to determine the youngster's specific strengths and weaknesses, and to lay the guidelines for the therapist to follow. Generally the major purpose of a psychological evaluation is to obtain a kind of X-ray of the student's thinking processes: that is, to begin to develop some understanding of how the student thinks and behaves in specific situations.

One significant aspect of this psychological evaluation is the careful assessment of the student's intellectual processes. We are not primarily concerned with the youngster's functioning intelligence level; we are much more interested in determining whether there is any significant discrepancy between his functioning level of intelligence and his potential capacity. For example, is there any significant interference to the functions of attention and concentration? The centering of the attention on academic subjects to be learned and the inhibition of the deflection of attention to other internal or external situations are necessary to a successful learning process. If attention and concentration are drawn to other external situations because these situations can serve as a means of gratification to the student, then there would be some interference to learning.[2] We have found, too, that even when there is some impingement on the function of attention if concentration is relatively well preserved and the individual has resources or mental energies at his disposal, he is able to replace the impaired free receptivity by voluntary effort or concentration. I have pointed out in a previous paper that those college students or adults in reading comprehension classes who show, on an intelligence test for example, high concentration even though there is low attention span, profit and progress very favorably in these reading programs.[1]

The intelligence test may also be used to determine the existence of an incipient thinking disorder. This may be reflected in responses suggesting loosened conceptual thinking (for example, "Who wrote Hamlet?" "Julius Caesar"); in over-concreteness of thinking ("Fly and tree are similar in that you may be fly-fishing and catch your line in the branches of a tree"); in impaired judgment ("If I were the first person in a theater to see smoke and fire. I would yell 'fire' "); and in extreme syncretistic responses ("The numbers 49 and 121 are alike because they are both equidistant from the number 85").

In addition to the more structured intelligence test, the psychological evaluation will usually include projective stimuli. These are so-called because the student, in responding to these relatively unstructured materials, will project his own ideas and feelings, his conflicts and anxieties, etc., and thereby, in a sense, give us a kind of X-ray of the personality. Thus, a careful interpretation of a number of different projective tests will yield these kinds of information about the individual: 1) his intellectual potentiality and efficiency, 2) his organizational ability, 3) his ability to see common everyday situations as other people see them, 4) his ability to integrate, 5) his ability to delay his reactions and to think and reflect before he moves, 6) his ability to meet practical problems, 7) his ability to think and function in terms of abstract reasoning, 8) his level of aspiration, 9) his intellectual ties to reality, 10) the extent of his anxieties if they are present, 11) the availability of his inner resources as an aid to adjustment, 12) the amount of conflict caused by the frustration of instinctual drives, 13) the amount and nature of control over these drives, 14) his ability to relate with other people, 15) his ability to respond to emotionally challenging situations, 16) the nature of his defenses, 17) the nature of his coping techniques, 18) the appropriateness of emotional reactions, 19) his concept of self, 20) his attitude toward male figures, 21) his attitude toward female figures, 22) the amount of dependence on others. All of these factors, I am sure you will agree, are invaluable in assisting the psychotherapist in planning the approach and type of psychotherapy to be employed with each individual.

Once we are reasonably sure that the student needs psychotherapy—that is, that his learning problems are the result of emotional factors rather than vice-versa—we are then ready to plot the course of psychotherapy. Psychotherapy, is in a sense, a wastebasket term. There are many, many different kinds of psychotherapy. The nature of the psychotherapy, the kind of psychotherapy which should be employed with the individual student, depends upon the information gleaned from the diagnostic evaluation. For example, one individual may be having a situational or reactive problem—that is, his problem may really be related to some specific difficulty in the home or in school. Some students are able to obtain relief when an older authoritative person outlines a simple required schedule of living, defining what to do when, thereby providing a supporting structure which is not available from within himself. It is interesting that many of our college students today complain about too much restriction both at home and at school and yet, at the same time, seem to be asking repeatedly for further and more substantial direction.

In addition to reactive or situational problems, many youngsters experience neurotic disorders which interfere with learning. It is essential to the definition of neurosis that the internalized conflict, either entirely or in part, be outside the individual's conscious awareness. In these cases, a formal program of psychotherapy is most definitely indicated whenever the neurotic conflict directly becomes involved with the learning problem. The conflicts may inhibit the youngster in the assimilation and digestion of knowledge or in the use of knowledge. The type of therapy indicated is one where the student is seen with sufficient frequency and regularity to allow the systematic investigation of certain unconscious or unverbalized ideas and feelings, the associations between these, the defense mechanisms developed and established in an effort to deal with all these, and then the systematic and selective communication to the student of the results of these investigations.

One of the problems that often arises in treating individuals with learning difficulties is the inability or resistance on the part of the individual to perceive how his academic difficulties could possibly be related to underlying emotional conflicts. Either consciously or unconsciously he resists the therapeutic process because it is, in a sense, a further threat to his own narcissism. Of course, the fact that the therapy is in danger of revealing certain ideas and feelings that the student desperately has attempted to keep buried provides another source of resistance. In any event, I found it important, in these cases, to directly challenge the rationalization on the part of the student. In other words, I very directly relate the therapeutic situation to the specific problem. I will ask the student specific questions about what he has learned and what he has not learned. I find that this direct approach has helped many college students to "open up" and to become more comfortable in the therapeutic situation. Unquestionably, the main job is to free the obstruction or the inhibition so that the patient will be able to carry through independently. But in many cases where learning problems are involved per se, it is essential that the therapy begin specifically with the student's awareness and verbalization of his individual learning deficiencies. In a sense, for a long time, the clinical psychologist becomes a therapeutic tutor rather than a pure psychotherapist.

Many college students, although they acquired the basic skills necessary for success, are unable to achieve academically because of their intense fear of their own aggression. In one sense, they almost have a positive motivation not to succeed. These youngsters are only too able to express aggressive or hostile thoughts if the concomitant feeling is repressed. They can intellectualize their hostility or play around with it verbally. But their conscience, which is really an internalization of their parental teachings, has become so overly strict and constricting that it allows for very, very little expression of aggressiveness. They are unable to differentiate between constructive and destructive aggression and therefore simply forbid any expression of aggression whatsoever. To really succeed in college unconsciously means to them that they are placing themselves in a position where they will meet with dire retaliation.

I am reminded of one patient who exemplified beautifully the dynamics behind this particular intrapsychic conflict which is so often manifested at a high school or college level. This youngster, an exceptionally bright young man, was the oldest son of a very famous and successful surgeon. In this boy's relationship to the father-figure (and, for that matter, to all male authority figures) he had assumed a very passive and submissive role. This role was chosen as his defense against the anxiety he would feel if he allowed himself to be normally hostile and assertive. It was as if he were saying: "I am not competitive with you, I do not envy you or hate you, I submit to you and am completely dependent upon you." Unfortunately, the need to maintain this role inevitably led to learning failure since the boy necessarily had to stifle drives and feelings which are necessary for self-assertion and success.

In my treatment of this young man, (which, incidentally, went on for a period of two years) the underlying hostility for all male authority figures made itself evident very early in the transference. Unable to express his hostility directly to me, he, nevertheless, did so through various deviant overtones. After just a few months of therapy, he indirectly made it known to me that a fellow student was really a better psychologist than I could ever be. Rather than argue this point with him, I merely pointed out to him that he must be very angry at me because he felt that I was letting him down, that I had not brought about any improvement in his learning difficulties. If I were to directly challenge him to be more active and aggressive in learning or, for that matter, in other situations, he would become very upset and would indicate that he felt I was pushing him to do "something wrong." Over a considerable period of time he was led to see that his need to be so passive and compliant in his relationship with almost every person represented his defense. Later, he began to obtain some understanding of the high degree of competitiveness within himself. It was only when he was able to verbalize this competitiveness and apply it to many different situations, that he could give up the passive and submissive role and react more assertively in his college studies.

I have attempted to give only a brief sketch of the kinds of problems the clinical psychologist will meet in his attempts to cope with the emotional conflicts of college students. Some learning difficulties arise because of a fear of curiosity and an inhibition to the exploratory drive. Some youngsters show a real fear of growing up, a fear which is then equated with success in college. But, above all, it is the student's self-concept which has become distorted. For varying reasons he is unable to establish an effective identification for himself. The clinical psychologist must first be able to sift through the debris, make an adequate diagnostic interpretation, and then carry out the steps needed to correct the problem.

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Contributions of Vision Sciences

By George D. Spache

Vision specialists from the fields of both optometry and opthalmology have exhibited an increasing interest in late years in the relationships of their research to reading achievement. Areas of contemporary interest in fields of vision science include visual perception, the integration of visual training exercises with readiness activities, developmental studies of children's vision, and the relationships of certain types of visual behavior and reading.

Technical Studies. One group of studies has been concerned with the perceptual behavior of children before and after school entrance, in English and other languages differing in their directionality. (2, 7) There does not appear to be an obvious effect upon accuracy of perception in the right or left hemifield of vision by school training in reading from left to right. Both preschool and school children, and college students showed a tendency to favor targets to the left of the fixation point. A parallel study with readers in Hebrew however, did seem to show the influence of the directionality of that language by exhibiting a tendency to right-to-left responses. (8) Still another study of this type seems to indicate that pre-reading set to read in one direction or the other probably outweighs any neurological differences in right-left fields of vision. (22) The significance of such studies lies in the implications or possibility of the need for special training in perception during beginning reading stages, if the directionality of the language seems important, or if neurological differences can be found in perception in the visual fields. Thus far, the research seems basically negative, or indicates that any such special concern is unnecessary.

Other vision studies have explored a variety of visual characteristics and their implications for reading and for perception. Walton and Schubert measured the relationship between myopia, or near-sightedness, and the size of print. Their study resulted in some suggestions regarding appropriate types sizes particularly at far point where myopic children would have difficulties. (21) Eames again demonstrated the retarding effects of anisometropia, unequal vision in the eyes, upon reading achievement, a finding present in many earlier studies. (3) In a more extensive study, Spache and Tillman (18) found a significantly greater proportion of retarded readers failed a near-point acuity test; showed differences in the near-point acuity of the two eyes (as in anisometropia), as well as poorer near-point acuity in the left eye. Those who believe that one eye leads or dominates the other in reading will, of course, interpret these results as confirming their theory. Unfortunately, the study cannot be interpreted to support the eye-dominance theory, for no measures of binocular function were given to most of the cases involved in this study, and therefore we have no knowledge of the relationship between differences in acuity of the two eyes, binocular function in the act of reading, and eye dominance.

Ong, Schneider and Moray (15) found no differences in the peripheral visual fields in the right versus the left eye, in fast or slow readers, in powerful or nonpowerful readers, or in high or low I.Q. groups. Although the girls, in this study also, excelled in power and speed of reading, the boys had a slightly larger visual field. Here again, we see no evidence of the significance of differences in peripheral vision for reading success. Smith and others investigated the variations in time and errors in different reading materials presented in various orientations to left- and right-handed subjects. Regardless of handedness, inversion or reversal of the material, or presentation at an unusual angle seemed to influence the reading performances, as we might well expect. (16)

Another group of studies has been concerned with the relations between motor coördination and reading ability, as exemplified in the investigation of Grattan and Matin. (6) They found some relationships with reading score in the child's control of eye rotations, in using a normal rather than close reading distance, and in the hand-eye coördination test on the Keystone Telebinocular. However, no significant relationships were observed among gross motor tests, such as jumping in place, catching a ball, and touching toes. A test of rotations performed while the child tried to balance himself on the square balance board proved highly discriminative. This study should be carefully replicated under conditions in which such variables as age, sex, and reading ability are more carefully controlled. Tests of motor skills in greater variety and with proven validity should also be included. Such studies have marked significance for beginning reading programs which emphasize motor skill training for the improvement of reading.

Longitudinal studies of children's vision (11), the accurate incidence of various defects at various ages, visual problems of children and their association with school and life success, and many other anatomical and physiological aspects of children's vision have been collected in a fine symposium on children's vision edited by Monroe Hirsch. (12) The effects of planned training in spatial orientation and in related visual skills have been demonstrated in a number of reports, such as that by Cox and Stewart. (1) This study again emphasized the interrelatedness of visual skills, in comparison to many atomistic studies, for only those children who showed improvement in all three visual skills stressed evidenced large gains in achievement as a result of the training.

This research in vision and associated factors has had some dramatic effects upon school practices. Reading specialists have been stimulated to more careful and thorough vision screening, particularly at near-point. The research has also promoted exploration of the effects of specific visual training procedures intended to correct functional difficulties, as well as stimulating experimentation with a wide variety of hand-eye, bodily balance, and other motor skill training procedures. Much more attention is being given to the perceptual habits of potential and actual readers, to corrective and training procedures, even though the research is still fragmentary and almost uncoördinated.

There still remains the need to implement the indications of the longitudinal studies of developmental variations in vision for classroom procedures and instructional materials. On the negative side, the tangential and fruitless studies of the interaction of reading eyedness, cerebral dominance and the like are gradually disappearing under the weight of accumulated research. Similarly, although the practice persists in some quarters, there is growing recognition of the uselessness of training procedures which attempt to improve reading behaviors by influencing the visual span. The physiological limits of retinal vision, the lack of any real increase in span after training, and the failure to produce any permanent changes in reading or vision by such an approach, plus the demonstrated similarity in span among good and poor readers, have all given a negative impetus to span training efforts.

Perception. The area of visual perception has been greatly emphasized in vision and psychological research in recent years. For example, Graham and others (5) have pursued a program of repeated research into tests of visual perception and labored with the problem of definition of the skill, as well as with the validity of its measurement in ill-defined groups such as the brain-injured or "perceptually-disturbed."

It is apparent that accuracy of perception is highly conditioned by the vision skills of the reader, such as fusion, refractive errors, ocular motility, binocular coordinations and the like. Among other factors which limit the sharpness of the image received, and hence the possibilitiy of resolution and perception, are these: the dimensions of the retinal area stimulated, the intensity of light, the contrast of the object with its background, the duration of the stimulus, the state of adaptation to light of the eye, and eye movements. (5) Visual acuity falls off very sharply as the image moves away from the center of the retina. Some research indicates, therefore, that the reader can actually resolve with sufficient acuity or sharpness of image approximately one to one and one-half inches of the printed page at near-point. Still other research shows that under optimum conditions the major part of the light energy from a given stimulus is concentrated on a very minute area of the retina. These physiological limits perhaps explain the extreme narrowness of the visual span in the act of reading which confines it to virtually a word-by-word process. These facts also contradict the claimed values of instructional procedures or devices which claim to increase speed of reading by increasing the visual span.

As for the components of stimulus duration and eye movements, there are available considerable research and normative data which leave few unanswered questions. The norms for the Reading Eye Camera indicate that the average durations of fixations range from .33 of a second for first-graders to .24 of a second for college students reading at 280 words per minute. The extreme brevity of these durations of fixation is quite logical when we realize that the critical duration for visual acuity is between .1 and .2 of a second, when the image tends to move enough to shift to other cones in the retina and thus impair resolution. The retinal cells rapidly become adapted to the light energy derived from the object, and cease to react except intermittently and then with reduced sensitivity. Furthermore, it is not possible to attend to and perceive two objects separately and independently (such as two words read successively in separate fixations or a single fixation) for one will cancel out the other or combine with it in some way. So much for the language scientists who believe that we perceive or read in phrases or structural units of sentences.

The brevity of visual fixations also has implications in the decay of short-term memory, for many experiments confirm the tendency for new images to erase what was previously perceived. To us, all this research seems to indicate that, for success in word perception, training in very rapid visual reactions appears to be essential.

The field of form perception is very complex, despite the efforts of some popularists to reduce it to simple paper and pencil tests. Form perception involves both the physical properties of the target as well variables internal to the viewer. Such factors as contour, grouping, figural aftereffects, distance, time intervals, fluctuations of attention and postural conditions influence form perception. Also, experiential elements such as continuity, completion, closure, and meaningfulness effect form perception.

Set or attention in form perception may be defined in terms of the antecedent conditions of recency and frequency, as well as the manner in which the viewer attends to the field of view. As Vernon (20) and others have pointed out, the total amount that can be attended to at any one moment is constant, and if only a small part of the field receives attention, little will be perceived in other areas. Conversely, if attention is diffused over a larger area, no one part will be very clearly perceived. In reading, perception is conditioned by such attentional facets as the influence of previous context; the emotional tone of the material and/or that of the reader; the instructions given; and probably the mathematical probabilities present in the number of meanings common to the word. Reactions to variability in meanings is called structuring by some, as in the Rorschach and other projective devices, and may be conditioned by the reader's personality. Even adults perceive most readily those words which reflect the social, ethical and moral values of the reader. This set is more true, of course, for relatively infrequent words, than for common value-laden words. (20)

Percepts attended with punishment or rewards seem to be reacted to in the expected manner. A negative set resulting in perseveration of responses in contradiction of their proximity, similarity or frequency has also often been observed. Even this brief review of the multiple factors which effect form perception conveys some concept of the complexity of this problem, and implies the need for continued research, if we are to discover the implications for reading instruction.

From a reading specialist's point of view this research in perception relates to two major questions: 1) the effect of methodological approaches to reading upon perceptual behavior and 2) the adaptation of methodology to producing desirable perceptual patterns. We must seek answers to the questions: "Does the method of teaching reading condition the child's perceptual behavior, as for example in the pattern of eye movements?" and "How should we adapt instruction in view of the implications of this great mass of perceptual research?"

Developmental data on perception seem to indicate a gradual progression from perception of wholes to later facility with details. Furthermore, children taught with an undue emphasis upon letter sounds in reading appear to analyze words they should be recognizing quickly as wholes, and as a result such readers tend to become retarded in rate and comprehension, even though they may show temporary acceleration in word recognition (word analysis) skill. Both these observations would seem to justify the present tendency, in America at least, to use analytic or whole word recognition at first, and to proceed later to synthetic approaches involving letter sounds and other internal details.

We see also in this research the implication that beginning readers need experience in manipulating shapes in order to progress to those developmental levels at which vicarious exploration by visual means will suffice. There appears then to be some justification for providing experiences in three-dimensional tasks, and in two-dimensional reproduction of shapes, at the beginning reading stages. Recent studies confirm the values of this training particularly for less intelligent and for culturally-deprived children. (17)

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Evaluation of Quantitative Data for Hand-Eye Coordination with Respect to Determining Its Correlation with Reading Disability

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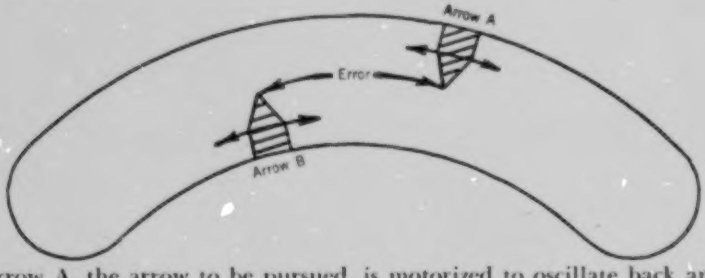
For many years, much effort has been directed at determining the causes of reading disabilities in young children in the hope that by better understanding the causes, more effective remedial techniques can be developed. In many reading clinics, one of the first tests administered to a child suspected of suffering from a primary or secondary reading disability was a simple, qualitative hand-eye coordination test. It was felt that since hand-eye coordination uses many of the same neurological paths and areas of the brain as does the reading task, this simple test could be used to indicate if the reading problem might be due to some type of neurological disorder. If this hypothesis was generally true, then there should be a correlation between hand-eye coordination and reading disability. The reading scores of a large number of subjects were readily available from the public schools, but reliable quantitative data on hand-eye coordination was not, nor was the equipment available that could be used to obtain this data accurately.

At Clarkson College of Technology, much preliminary research was done in the design of a method to determine quantitatively a subject's hand-eye coordination. The initial testing involved complex equipment (e.g. Analog Computer, function generators, and oscilloscopes). Because of the size of the equipment, it was always necessary to bring the subject to the college laboratory to be tested involving a great loss of time for the individual. To alleviate this condition, a portable, self-contained, and relatively inexpensive apparatus was designed based on the same principles as those of the preliminary research. To prove this design, three more machines were manufactured as replicas of the first. Using these machines, data from a large number of subjects was gathered for a reliable statistical analysis to determine if a correlation between hand-eye coordination and reading disability did exist at the primary and secondary school levels.

PROCEDURE

Description of the Testing Units

Machines were developed whose testing principle was a pursuit mechanism following a cyclic "random" appearing motion. This mechanism's motion, as viewed by the observer, is explained in the diagram below:



Arrow A, the arrow to be pursued, is motorized to oscillate back and forth through a total maximum arc of 60°. The "random" appearing pattern is developed by floating linkages and is cycled by a gear train. The follower or pursuit device, arrow B, is operated manually and is free to move to follow arrow A. The error, as shown in the diagram above, is the distance between the two pointer tips.

The object of the test is to keep the two pointers as closely in line as possible for one minute. The score is developed by feeding a voltage proportional to the error to an Analog Computer which totalizes (integrates) the signal over a 45 second interval and displays the computation on a meter mounted on the rear of the machine. It is held on this meter until the next test is begun, at which time the machine will automatically reset itself to zero.

Test

A test for one individual involved six sub-tests for the six possible hand and eye combinations:

1. Right hand—both eyes
2. Left hand—both eyes
3. Right hand—right eye
4. Right hand—left eye
5. Left hand—left eye
6. Left hand—right eye

It takes approximately 10 minutes to test one individual. By using two machines (a practice found to be the most feasible for one operator), a maximum rate of 12 subjects an hour can be tested.

Before each day's testing, the device was calibrated by a simple procedure which insures standard results. Periodically, the device was checked to compensate for temperature changes which may occur in the machine during the test day, likewise a simple procedure.

The testing was done in a room containing the two machines, two subjects, an observer, and the testing administrator. Before each test, information was obtained from the subject as to the individual's name, age, grade, sex, and hand dexterity. The tests were staggered so that one person would be finished as one was approximately half way through. The observer then took his place at the machine while the subject, who had completed the test, returned to his class to send back a new observer. Since the new subject had observed the test procedure, the only instruction necessary was a reminder to "keep the pointers as close together as possible." No set pattern was followed in determining the order of the six modes tested. At the end of a day's testing, the individuals' school records were examined for their reading levels and I.Q. All these data were recorded on IBM cards to be analyzed on special programs for the IBM 360 Digital Computer.

ANALYSIS

Digital program number one called upon the computer to store the data in its memory and sort it by each of the previously mentioned characteristics. The computer then determined an average, standard deviation, reliability, and number of subjects in each of these groups. A special section was devoted to reading level. In this section, the scores were separated by reading level, then averages, standard deviations, reliability, and group size were calculated. To test the theory of neurological path disorder which might be present only in one of the six modes tested, the same analysis was performed considering only the worst mode for each individual. In determining an indication of reliability, two methods were employed: the Spearman-Brown Prophecy Formula and a statistical approach involving the Central Limits Theorum and the Law of Variance.

Using results from computer program number one, correlation coefficients could be determined by program number two. Digital computer program number three was used to determine the normality of the original data, and a fourth program was used in determining the reliability of the machines and the reproducibility of the data. The population sample came from these areas:

1. Potsdam Central School System	820
2. Canton Central School System	710
3. Syracuse area (Poor readers as diagnosed by the Syracuse University clinic)	290
4. Congdon Campus School	180
	2000

The information collected was from the even grades from 2 through 12 and from the seventh and ninth grades to insure high reliability for the period of adolescence.

Machine reliability was determined from a sample retest of 60 sixth graders from the Potsdam Central School system.

RESULTS

1. The correlation coordination between reading level and coordination for the sixth grade was 0.198. This result was typical of all grades tested.

2. When the worst mode of the sixth grade subjects was considered, the correlation coefficient was −0.179.
3. During the period of adolescence (from approximately 12 years to 14 years 6 months), there seems to be a decrease in hand-eye coordination. (A lower test score is indicative of a better co-ordinated subject.
4. The machines produced similar data. In the 17 year old age group, 54 subjects on machine two had an average of 16.57 and a standard deviation of 7.37. Using machine three, 39 subjects had an average of 16.26 and a standard deviation of 4.42.
5. The test data of 60 sixth grade subjects showed an average of 19.56 and a standard deviation of 6.69 in January, 1967. In June, 1967, a retest of these same 60 subjects showed an average of 18.70 and a standard deviation of 5.07. The change in the average scores, less than one point, is the change that might be expected for this six month period using sixth grade children.
6. The correlation coefficient between coordination and I.Q. was −0.890.
7. Generally, a minimum of 75 subjects is necessary to obtain a reliability coefficient above 0.85.
8. Of the 2000 subjects tested, 25 were unable to obtain a score on the meter in at least one of the modes tested. In many cases, the reason for this seemed to be that the subject could not concentrate on the problem during the entire 45 second test period. Several interesting cases are described below as an indication of what may be discovered when a large group is tested:
   a) In a special class (I.Q. less than 75) a girl was found to have reversal tendencies. Her reaction was always opposite to that which would be expected.
   b) In this same class, a boy scored well below average for his age level. However, he was the only one in this class who attended a gym class with children his own age. In fact, he was considered by his teachers to be a better than average athlete.
   c) During the test and the retest of 60 sixth grade pupils from the Potsdam Elementary School, one person was unable to obtain a score. She was the only one in this group that "failed" either time. In fact, she "failed" both times even though the retest was six months later, using a different machine and conducted by a new administrator.

CONCLUSIONS AND IMPLICATIONS

1. There is no direct correlation between reading disability and hand-eye coordination when large populations are considered on a statistical basis. This does not imply that on an individual basis,

hand-eye coordination data could not be a useful factor in determining the cause of reading disabilities.

2. The machines produced similar data when used to test subjects in the same population.
3. The data of a population have been shown to be reproducible by a test and retest.
4. A person's coordination improves with age in the range 8 to 18 years, except for the period of adolescence. (Appendix A 1)
5. Hand-eye coordination appears to correlate with I.Q.
6. Coordination tests with children in the low I.Q. range indicate a wide variety of results. It would seem advisable to test these subjects to measure their physical capabilities, balance this against their mental capacity, and determine a measure of their trainability.
7. Results of these tests indicate that subjects at the second grade level and below are capable of using this type of advice. It is, however, felt that the device would have to be modified slightly to produce a less random appearing target motion. If this were done, it would be possible to test the pre-kindergarten children, now involved in such programs as Operation Head Start, in an attempt to determine their coordination characteristics.
8. Future areas where coordination test might prove valuable include:
    - a) medicine—to determine the effect of alcohol and/or drugs on coordination
    - b) neurology—to determine the extent of a neurological disorder or surgical recovery
    - c) traffic science—a quantitative test for the elderly drivers to determine their coordination factors as an indication of their driving ability.

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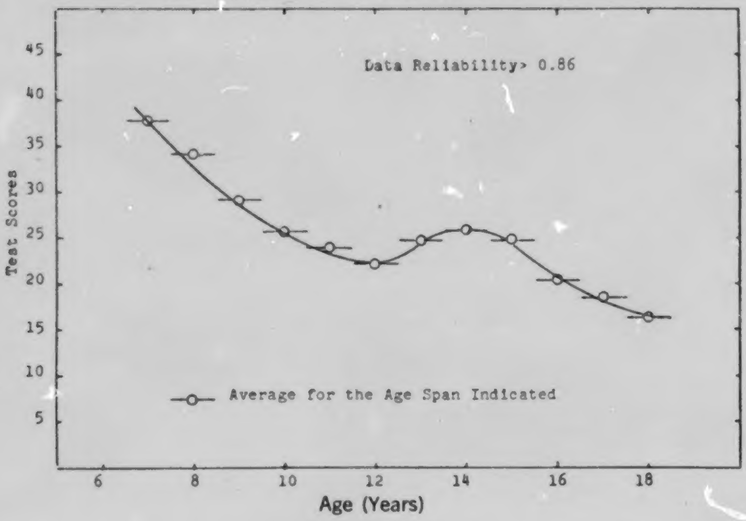
Appendix A-1

RELATIONSHIP OF TEST SCORES AND AGE

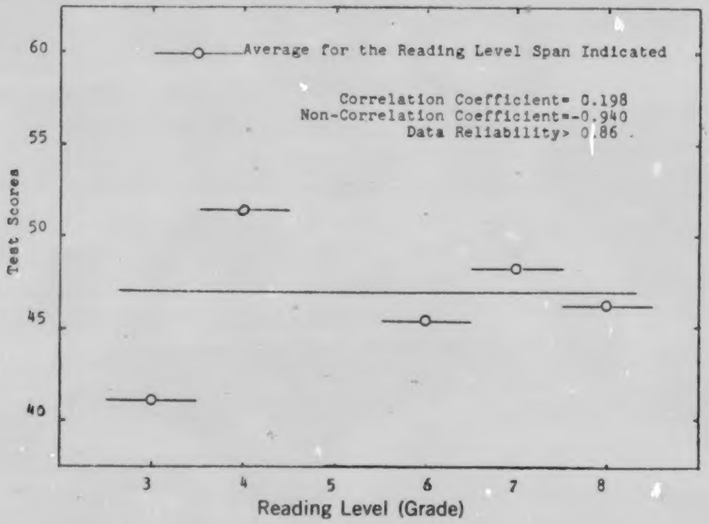


Appendix A-2

RELATIONSHIP OF TEST SCORES AND READING LEVEL

Grade Six

Scores Normalized for Age

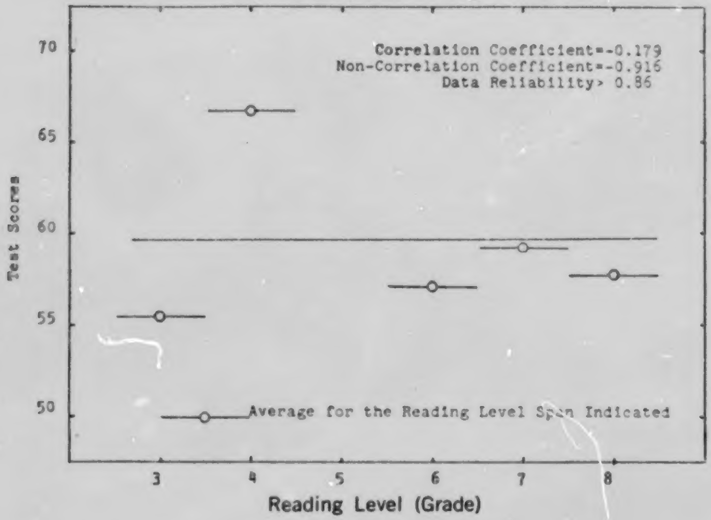


Appendix A-3

RELATIONSHIP OF TEST SCORES AND READING LEVEL CONSIDERING THE INDIVIDUALS' WORST MODE

Grade Six

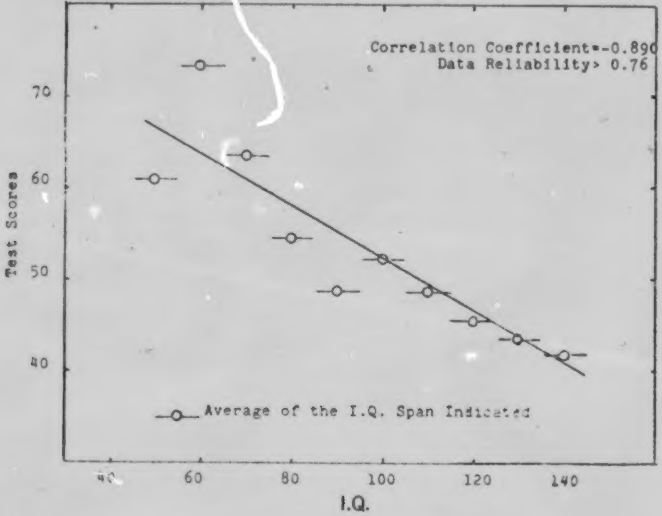
Scores Normalized for Age



Appendix A-4

RELATIONSHIP OF TEST SCORES AND I.Q.

Test Scores Normalized for Age



Ethics Revisited-The Current Dilemma Facing the College-Adult Reading Specialist

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Two years ago I spoke at the North Central Reading Association about the problems created by the expansion of commercial super-speed reading programs, the ethical questions raised by their methods and advertisements, and the threats they made to professional reading people who challenged them. (5) Because a number of reading specialists have expressed their interest and concern about these problems, I feel that it might be interesting to look at the current situation and see what changes have occurred.

A code of ethics and standards of training for practitioners are hallmarks of any professional organization. In 1961 an International Reading Association committee developed a code of ethics and a statement of minimum standards for the professional training of reading specialists. The statements concerning qualifications for reading specialists were naturally quite general—e.g , .maaster's degree or a bachelor's degree plus thirty hours in reading and related areas; however, this represented the first attempt to provide guidelines for the hiring of reading specialists. The IRA Code of Ethics includes statements concerning the qualifications and policy practices for reading specialists, confidentiality, the importance of recognizing the limits of one's competence and the importance of referring when necessary. Also there is a statement that "reading clinics and/or reading specialists offering professional services should refrain from guaranteeing easy solutions or favorable outcomes as a result of their work and their advertising should be consistent with that of allied professions. They should not accept for remediation any persons who are unlikely to benefit from their instructions, and they should work to accomplish the greatest possible improvement in the shortest time." Such ethical principles are designed to protect the public from unscrupulous practitioners.

In 1965 the IRA issued a press release clarifying its position against advertisements which guaranteed reading improvement, and it has also sponsored movie and television programs designed to educate the public to view these reading claims more realistically.

However, by continuing to guarantee favorable results and by accepting any student who is willing to pay, the largest commercial reading organizations are still blatantly disregarding these ethical principles.

An example of one of the largest commercial programs is Reading Dynamics founded by Evelyn Wood. From its inception in 1959, Reading Dynamics has waged an aggressive advertising campaign. It has purchased full-page ads in the newspapers, ads which feature testimonials from well-known people (e.g., Senators Proxmire and Talmadge) and guarantee your money back if you fail to *triple* your reading rate. Star pupils reading 40-50 pages a minute have given demonstrations on television programs and in the free-sessions designed to attract pupils. Saturation-advertising techniques have been used--spot announcements on radio stations, handouts in supermarkets, billboards, etc.

It is interesting to note the differences in the claims made by Mrs. Wood in speeches before professional groups and those made in her advertisements. For example, at the College Reading Association conference in 1960, Mrs. Wood (11) gave examples of students who read between 2000 and 3000 words a minute. Yet her advertisement claimed that after completing the course students could read as fast as 20,000 words a minute. At that time she attributed [illegible] discrepancy between the advertising claims and her statements to [illegible] inability to control her enthusiastic public-relations people.

By 1961 the Wood Company, having expanded too rapidly by opening branches in 32 cities, faced bankruptcy. (3) This expansion seemed motivated by a fear that others would steal the Wood method. Moreover, lawsuits were filed against competing programs. Students who took the courses were required to sign an oath that they would not show materials or reveal the methods to others. Teachers who quit the program were often sued if they stayed in the reading field.

Today, Reading Dynamics is owned by a group of Washington investors, and the number of branches has been reduced. Mrs. Wood is still a consultant to the organization, but no longer is an owner. (3) That the business is still a lucrative one can be inferred by several facts. In March 1966, the *New York Times* financial section contained an ad offering high profits and personal satisfaction to those who wished to enter the business by purchasing a $500 franchise for the Wood method. To qualify, one needed a "solid educational background, excellent references and adequate operating capital of $15,000 to $25,000." The franchise entitled one to full training in the Wood method and experienced management guidance. At that time 31 cities ready for franchises were listed, including Minneapolis, Calgary, Syracuse and Pittsburgh, and the ad indicated that one could earn 30% net on sales after taking out the owner's salary.

Currently, at least in the Washington area, there seems to be no end to the people who are willing to pay $175 to learn to read dynamically. The advertisements have become even more seductive—"Reading getting you down?" reads one ad which pictures a tired business man with a desk stacked with papers and books; the ads guarantee results, stating that the average student improves his reading efficiency 4.7 times. Other ads emphasize how Reading Dynamics changed the lives of its students from failure to financial success.

It is obvious that large numbers of people have taken the program; ads in June 1966 claimed 250,000 graduates, and those appearing in November 1967 report 350,000.

What have been the results of the program? No one to my knowledge has systematically investigated the results of Reading Dynamics. I have occasionally run into people who feel that the program was very beneficial, since it seemed to give them the freedom to read more rapidly. Many others have wasted their money. In my work in a college reading program, I rarely run into the satisfied customer. I am more likely to meet the victims of such programs—students with deficient vocabulary and comprehension skills who learned the game of page-turning and not much else. These students are particularly difficult to retrain; and motivating them to work on the more basic skills that they desperately need in order to survive academically is an even more difficult task. We get large numbers of these students in our summer program for low-achieving college applicants.

Another victim is the bright but slow and compulsive student. He is particularly vulnerable in super-speed reading programs to that phenomenon which Robert Wilson has called brain-washing the student to believe that reading slowly is sinful. This student abandons his careful plodding habits in favor of superficial glancing at pages as his sole technique in reading. Thus, he is likely to fail his college courses.

The consistent failure of commercial reading programs to eliminate students who cannot profit from speed reading courses and to recognize that some people cannot learn by their methods is a continuing concern to professional reading specialists.

From time to time some of the super-speed reading programs have hired trained reading specialists. (Reading Dynamics, at one point, did attempt to screen students for its program.) However, professional people rarely remain in these organizations. Their role appears to be mainly that of academic window-dressing; and once a program is established or student enrollments decline they are fired.

Colleges, particularly small colleges, are often plagued by commercial organizations, such as one with a prestigious Princeton address, who attempt to recruit students for their program. On one campus the dean permitted a reading program salesman to give copies of the Nelson-Denny to each student entering the chapel. All students were thus recruited for his program. Since a rather strong letter was sent both to the students and their parents indicating the students' great need for help, the entrepreneur was able to get most of the student body, at $75 per head, to sign up for a six-week program. Fortunately, the reading specialist in the institution learned about it and was able to stop the program. Incidentally, those students who had already sent in their money did not get refunds.

Applying dynamics reading techniques to children, the retarded and the handicapped seems to be a lucrative business also. Mrs. Wood's claims have been surpassed by Dr. MacBride, who is his own press-agent. In glowing prose he describes the 11-year-old he taught to read at 100,000 words per minute. He claims that his reading methods have cured stuttering, and that he gets particularly good results from children deaf from birth, since they don't sub-vocalize. The mentally retarded can make extensive gains in speed reading through his training exercises designed to "utilize" undamaged parts of the brain, and 5 and 6-year-olds are taught to read two books simultaneously in less than a minute, he reports. (8)

The ethical code of the American Psychological Association specifies that "using testimonials from satisfied users" in advertising matter is unethical and that claims that a practitioner has unique skills or unique devices not available to other members of the profession should be made only if the special efficacy of these unique skills or devices has been demonstrated by scientifically acceptable evidence. (2) The IRA Code of Ethics specifies only that advertising should be consistent with that of allied professions and does not mention that claims should have some scientific basis.

What does research reveal about the claims of commercial speed reading programs? There is a paucity of research on adult reading. Using the Reading Eye Camera, Taylor (9) evaluated the pre- and post-testing results of 41 students in the Reading Dynamics Course. He found that although they were a superior group to start with (averaging 474 words per minute), they gained only 90 words per minute (20 per cent improvement) at the end of the program, with a 3 per cent increase in comprehension. When asked to read "dynamically," they averaged between 2000 and 4000 words per minute, but their comprehension dropped to 49%. In reading dynamically, they appeared to resort to a skimming and scanning process which resulted in a substantial loss of comprehension. Ehrlich (1) reported that he tested graduates of Reading Dynamics on a page of typewritten material and found they averaged 6000 words per minute. When he had them re-read the same material to make sure they understood it, their average speed dropped to 1700 words per minute. Ehrlich concedes their speed scores were impressive, but notes that the material he had used consisted of garbled lines from two different magazines. The material was meaningless, but none of the adults realized they had been tricked.

Although a number of the investigators have reported pre- and post-rate gains, no one has undertaken a carefully designed experimental study to investigate the process and results of super-speed training. There is indeed a dearth of research in this field.

Wilder, a sociologist, in a report on his study entitled "The Reading Experts: A Case Study of the Failure to Institutionalize an Applied Science of Education," takes to task the reading researcher. (10) He reports his frustration in attempting to demonstrate objectively that the most influential researchers have had any effect whatsoever on beliefs about teaching reading. The respondents' amount of research involvement was found unrelated to opinions. Beliefs of respondents who claim to have been influenced by some particular researcher were no more alike than were any others. Although Wilder asked questions about beginning reading, I am sure that there would be even greater disparity in opinions on adult reading where the research evidence is so limited.

What impact have commercial speed reading programs had on the reading profession? There are those who say that the reading field as a whole has profited from the intensive advertising campaigns waged by commercial organizations, just as Brand X profits if its competitors spend large amounts advertising their product. However, Paul Leedy (4) has pointed out that because of unprofessional advertising, genuine reading instruction has been made circumspect. The more intelligent adult is suspicious; and if he has known someone who has wasted his money on a phony course, he is skeptical about all reading courses. Leedy also suggests that we take a careful look at the legitimate adult reading programs, for often the "language, ideas, and the program (of the charlatan) is so close to the 'professional' approach that to distinguish professional competence from fast sales talk is extremely difficult."

There are those who say that the fees charged by the commercial reading programs are exorbitant but raise the level of income that legitimate reading instructors can earn. In surveying the commercial programs in the Washington area, I found they range in length from 6 to 12 weeks and cost from $96 to $175. The range in cost per classroom hour is quite wide, from $3 to $8.70 per hour (the higher figure being the cost of the Reading Dynamics program which has the greatest amount of advertising). That there is money to be made in commercial reading programs is obvious, and the popularity of such programs seems to persist.

What can professional associations do? As noted previously, the IRA issued a press release in 1965 stating that advertisements guaranteeing results are unethical. (Yet ads guaranteeing results are still printed daily.) The fact that the IRA permitted a Reading Dynamics display at its 1967 convention points up the impotence of its attempts to influence advertising claims. What can be done?

Professional associations can only police their own members. Editors are under no obligation to adhere to ethical codes of other professions as long as ads are in "good taste" and the general public does not complain too loudly. Better Business Bureaus will, if pressured, investigate specific complaints; but if the plaintiff refunds the money, their task is completed. Lawsuits are expensive, and the plaintiff usually can find loopholes in his agreement through which he can escape. (We have found that local commercial reading organizations usually have lawyers who are quite adept at circumventing local state certification laws and other complaints.)

The College Reading Association's Committee on Ethics and Standards has for a number of years considered the dilemma posed by commercial reading programs. Mazurkiewicz (7) has recently proposed a method for discriminating between professional and nonprofessional reading specialists by establishing a certification system. Those who qualify by training and experience would be called "Anagnologists" (a Greek-derived term meaning "student of the art of reading").

To be effective, such a proposal would involve extensive education of the general public, both to recognize and to accept the term. In his original proposal, Mazurkiewicz specified that the anagnologist demonstrate knowledgeability in English, history and psychology of reading; philosophical, sociological, anthropological and economic trends and influences on reading instruction; learning theory; psychology of thinking; child development; evaluation and diagnosis; literature and literary criticism; research in reading; research tools and experimental methodology; educational practice and school curriculum. To find people thus qualified might be difficult.

However, inadequately trained personnel present a problem that plagues all college and adult reading programs. Because few institutions have specific graduate programs in college-adult reading, the professional training practitioners acquire is usually obtained through professional organizations and journals.

In a study of 345 members of the College Reading Association, Maxwell (6) found that 48 per cent of the group had less than one year's experience in the reading field. Fifty-two per cent of the group reported having a practicum course or supervised work in reading, and only 69% of those holding doctorates and 60% of those without doctorates reported having taken any reading courses at all. Perhaps it is too early for the college reading field to attempt professionalization when so many of its practitioners lack training and experience.

The ethical dilemma posed by the over-zealous claims of the commercial reading programs and the harm that results from their failure to select students still confront the reading profession, and will probably continue to in the future. The answer lies in education

—educating the public to become more sophisticated and less gullible to the claims of the unscrupulous entrepreneurs. Concurrently, the tremendous need to provide better professional training for the persons who are entering the college-adult reading field must be met. Establishing professional standards, providing adequate curricula for training college-adult reading specialists and the improvement of research at the college-adult level are problems which must be resolved if reading is to be recognized and accepted as a true profession.

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Cloze Symposium

National Reading Conference
A. Garr Cranney —University of Florida
Richard Bloomer—University of Connecticut
Earl Rankin —Texas Christian University
Wendell Weaver —University of Georgia
Eric Brown —Syracuse University
Frank P. Greene—Syracuse University,
Coordinator and Chairman

INTRODUCTION

This symposium was designed to allow a number of invited speakers to present ideas on many aspects of the cloze procedure, and to allow and encourage discussion of other ideas by the entire group present. The session was based on the assumption that the group was already familiar with cloze. If the reader would like basic information about cloze, it was suggested that he look at the Rankin articles in earlier National Reading Conference yearbooks—Number 8 (1959), and Number 14 (1965).

INITIAL PRESENTATIONS

A. Garr Cranney:

The cloze technique in recent years has been applied to a number of uses related to reading. Two of these utilize the cloze procedure as a teaching and a measuring device of reading skills.

There are few studies reported in the literature utilizing cloze as a teaching device. Bloomer (1962) reported significant gains in comprehension skills of a group of college students. Schneyer's (1965) group of sixth-graders did not show significant improvement when compared to a control group. Of particular interest was Friedman's (1965) dissertation using cloze to teach English to foreign students. Though gains were reported in some vocabulary skills, self-report comments indicated that cloze required them to "think in English." This shift from a word-by-word translation approach to "thinking in English" seems to be an important perceived step in the acquisition of a second language. Though studies involving foreign students are difficult, due to extreme differences in language skills and experience, it would be most interesting to have further cloze studies applied to the area of foreign language teaching.

Rankin's (1965) review indicates much more research is available investigating cloze as a measuring device. Cloze tests generally correlate in the range .50 to .90 with other conventional reading tests. There have been no attempts, however, to improve these concurrent validity correlations through eliminating ineffective items of an existing cloze test. Greene's (1964) dissertation is one of the few studies that presents item data, though Rankin (1965) has stated that cloze tests contain many non-discriminating items that may adversely affect validity.

In the recent unpublished dissertation by Cranney (1968), two, three hundred item, every tenth word cloze tests were item-analyzed on separate groups of four hundred college students. It was the intention of the research to identify and eliminate ineffective cloze items and to investigate the effects of using only the "best" items on the correlation coefficients of cloze scores with the *Cooperative Reading Test,* Level of Comprehension scores. The question was whether the elimination of the ineffective items would improve the validity of the two tests. One hundred and sixty-five ineffective items were eliminated from each three hundred item cloze test. Items were eliminated due to extreme scores on the difficulty index and low correlations with total cloze test score. With neither of the improved, shortened tests did the correlation coefficient with the *Cooperative Reading Test* show significant improvement. The range of the four coefficients was .51 to .54. As expected, however, reliability coefficients ranging from .83 to .93 showed a significant difference in favor of each of the longer "unimproved" tests.

This seems to reaffirm the measurement principle of longer tests having higher reliability coefficients than short forms of the same tests. But, it also suggests that common item selection procedures applied to cloze tests may not necessarily improve the validity of the instruments. Other studies are needed to further investigate and cross-validate these findings.

Richard Bloomer:

Study of the cloze procedure and its utility is relatively new and has been confined to the areas of readability, comprehension testing and reading comprehension improvement. The study by Hafner (1965) has suggested a number of other potential uses for cloze. I would like to suggest several additional uses or improvements of present uses which might be fruitful areas for exploration.

Cloze Testing

Cloze: Intelligent Test. There is a relationship between the number of correct clozures and the intelligence of the responder. This relationship has been particularly strong where nouns were deleted from the material. Given the premise that intelligence is related to verbal ability, and verbal ability in turn related to the frequence of the vocabulary an individual uses, the correction factor for the frequency of occurrence of the word substituted might well serve to increase the correlation and hence the efficiency of cloze as a measure of intelligence. Such a test would be related in part to an individual's ability to read. In addition, such a test would not necessarily be culture-free: the scores would depend upon the language patterns of the individual. On the other hand, the test would be simple to administer.

and would in turn be easily corrected for the individual's reading level.

Cloze: Aptitude Test. Based upon the premise that an individual's language and ability to handle concepts is superior in an area of interest and potential specific aptitude, tests using cloze could be devised. These aptitude tests would afford, as did the intelligence test, a weighted score for infrequent or specialty bound words. Materials of varying levels in the social sciences, the sciences or any vocational area, can be graded in difficulty to give an indication of an individual's ability to handle conceptualizations in any particular field. A well-developed battery of these materials with several levels of materials in important areas, with corrections for the individual's age and reading ability, might well afford an effective predictor of specific academic or vocational success.

Cloze: Syntactic Ability Test. While individual syntax is no longer considered a serious problem, where an individual syntax is to be converted to standard syntax it would seem that cloze could be used as a test of standard syntactic ability. Syntactic problems could be incorporated in the blanks of one or several cloze passages. Reading level and syntactic ability would tend to interact in such an instrument. However, this interaction could be largely avoided, except for cases of extreme reading disability, by making the cloze material selected of extremely low readability.

Cloze: Controlled Projective Device. The cloze procedure bears a relationship to sentence completion type personality tests. Cloze responses appear to vary with the personality of the individual filling in the closures, and seem to form a consistent pattern. Sentence completion techniques bring up a consistently varied sequence of problem situations through the cue stem. Cloze could be used to measure the consistency of a particular reaction by giving a longer contextual association relating to a particular kind of problem. The cloze context would determine the nature of the response to some degree by determining the theme of the problem. Problems would be built in such a way that an individual may make a number of possible answers depending upon his basic hostility, insecurity or security, or sociability, or other dominant personality theme. The examiner would be concerned not only with the nature of the response but also with the consistency of the response to a particular cloze passage or through several different cloze passages. This would serve to give us a much more reliable estimate than is presently found in sentence completion type materials. The following represent examples of materials:

> His———did not like him and others thought he was ———. When he went to———he was always———. Sometimes———would ask him to———.

or:

Susan was a——little girl. Her mother and father often asked her to———. Her mother and father were never———. She liked to play best with———and sometimes she———.

Further, it would be possible to develop an objective scoring system for scoring the cloze responses. One method of developing an objective scoring system would be to use the semantic differential to estimate the position of various words on a continuum. Each word substituted in the cloze passage might therefore be graded on a number of dimensions. The relative sum of words for each of the dimensions, the sum of the scores for any particular dimension, would give the propensity of an individual to move into or to be affected by that particular dimension. Standard scores could be developed for individuals of varying age levels.

Cloze Teaching

Cloze appears to have four possibilities as a teaching instrument: the teaching of grammar syntax: the teaching of composition; the increase of reading comprehension; and the teaching of content. In each case, the cloze procedure would be handled somewhat differently to produce desired results.

Grammar and Syntax. Data with nonreinforced cloze (no key provided) indicates an increase in the ability to make closures of certain specified syntaxes of the syntactic categories used. Increases were noted in the ability to fill in prepositions and conjunctions, noun determiners, modifiers, and in some instances, verbs. Random cloze training of a non-reinforced variety also produced an increase in the ability to fill in words of several syntaxes. However, the non-reinforced cloze appears ineffective with nouns, and relatively ineffective with verbs.

It should be noted that cloze exercises bear a certain similarity to the sentence-type exercise which is customarily used for the teaching of grammatical structure in workbook-type materials. Workbook materials typically consist of a sentence in which a blank has been left for the individual to fill in, involving some syntactic problem. Sometimes the blanks are presented with multiple choices and sometimes with constructed responses. The probability of a correct response is controlled by the selection of the technique of presenting the correct answer. Further, these materials are typically reinforced by an answer key at the back, or by teacher or student correction of the material subsequent to the working of a parge. These materials have the disadvantage that they are discontinuous sentences while normal speech or writing is more continuous in form. This objection could be avoided through the use of the cloze.

We can see a relationship between the teaching of syntax and the over-use of cliches. The pupil tends to learn to use his language in patterns and hence does not weigh each specific word which he utters or writes, but rather begins on a particular language chain which will lead him to his desired end point and simply fills in from his learned language pattern and does not think about choosing the words in between. We can see that many of the syntax and grammar teaching exercises we give to children also do exactly this: they teach the child language pattern, the difference being that the syntactical language pattern is an acceptable and common convention whereas the cliché because of its over-use becomes qualitatively unacceptable. In essence, then, the language teacher in some measure works against himself by teaching grammatical form as a language pattern.

Composition and Cloze. The teaching of composition is, from the present point of view, almost an opposite kind of problem from the teaching of syntax. Syntax involves the use of regular and relatively conventionalized forms, whereas the goal in composition is the use of unusual and inventive ways of expressing oneself. Again, contrary to the problem of syntax, the syntactic forms which carry the greatest weight in the composition are such words as verbs, adjectives and nouns. The variety and unusualness of these words tend to be related to the policy of the composition.

A large bulk of the literature which relates to composition expresses various techniques for increasing the quality of student work. That this kind of literature continues is testimony to the relatively limited success of the techniques offered. The difficulties which the students appear to have lie in three general areas. First, the students appear not to be able to get a generalized overview of the material and hence the material they write is poorly organized. Second, English teachers bemoan the number of clichés, the paucity of the language of the students. The written expression of pupils appears to take a very conventional form and hence does not captivate the audience nor express in subtlety the limits of the subject. Third, some pupils seem to make systematic sets of grammatical errors and these appear very difficult to correct.

Given the fact that an individual responds to verbal stimuli by responses in kind, and since we would wish to continue the production of highly emotional and infrequent responses on the part of the individual, in order to train the individual to more complex language patterns we will have to present not just a theme as a set of stimuli but also a series of continuous stimuli throughout the composition which will reinstigate the writer to more emotional and less frequent language. The obvious detriment to this kind of system, however, is that the individual will then become dependent upon successive sets of stimuli throughout his composition and will not be trained to produce his own material. However, as we withdraw the amount of stimulation in a verbal work association situation, we find that the quality of responses remains essentially the same, although the variability of predictability of responses decreases. Thus, after we have trained an individual to respond to emotional stimuli by producing emotional words and respond to infrequent stimuli by producing infrequent words, we can gradually withdraw by a technique of fading, similar to that used by Skinner, and make the individual more independent and more able to generate his own long sequence patterns. Cloze offers a technique for accomplishing just this end. In cloze, an individual draws from his own stock of words and his own language patterns to fill in the blanks which are left in the material. Further, the fading situation will also be of some assistance in teaching the child to organize material, because the first material he gets will be highly structured and organized. As he continues to respond, he will have to insert more of his own structure and organization. Hence in some measure, the use of the fading cloze as a training device will afford the child the use of richer language patterns and in some measure assist him in the organization of his thoughts. Cloze also offers sufficient structure so that the individual makes a miniscule number of syntactical errors.

Reading Comprehension and Cloze. Bloomer (1966) found that cloze appeared to be related to growth in reading comprehension at the college and sixth-grade levels. Schneyer (1965) however, found no particular effects from prolonged cloze training. The difference in these studies indicates that the manner in which cloze is presented may either produce or not produce effective results in increasing reading comprehension. Carefully prepared motivational conditions are required for the production of reading comprehension. The question as to whether results in increased reading comprehension under motivational conditions are a function of cloze training or merely a function of the motivational conditions as applied to any type of reading comprehension materials remains to be answered.

There appears to be a further limitation in relation to the age group for which this material is effective. Cloze will not work for children who cannot write in the appropriate missing words, though an attempt at the use of oral cloze with younger children might prove to be interesting. Further limitation is that cloze is ineffective with pupils who have not developed fairly strong language patterns. Younger children appear to repeat the cloze cue rather than to fill in a word which will make the material meaningful and hence do not develop systematic meaningfulness from cloze material. A mental age of about ten or higher is required to function with written cloze.

Content Learning and Cloze. Experiments indicate that cloze is generally effective for increasing the immediate comprehension of materials. However, pilot studies show that extremely difficult cloze material is ineffective in teaching content. One study indicates only mild relationships occur between comprehension increases and cloze with the use of non-reinforced cloze exercises. (Bloomer, 1966) The use of cloze to increase understanding of content should be reinforced.

If we look at cloze in relation to programmed instruction, we find that reinforced cloze has all the elements of good programmed instruction: cloze demands responses of individuals and cloze can present reinforcement for correct responses. Cloze will probably be somewhat less effective than programmed instruction of the Skinnerian type in producing verbal responses patterned directly upon the content of the material. On the other hand, cloze can be manipulated so that the individual will be more likely to conceptualize the material.

For the purpose of increasing the probability of reinforcement a key word list (a scrambled list of all the correct answers) may be placed upon the page so the individual learner can use the list as an aid to achieving correct responses. Reinforcement with a key word list would be the specific word deleted, particularly where noun deletions are used. With deletions of adjectives and verbs, the instructor may use a second scoring key which would allow adequate substitutes.

As with other applications, the use of cloze as a technique for increasing an individual's knowledge of content would require considerably more experimentation. Certain indications in the literature appear to suggest that cloze will increase immediate comprehension, but there also must be a concern with the delayed recall of content material learned in a cloze exercise. This appears to be an area of cloze which is worthy of experimental effort.

Earl Rankin:

Saying something significant in twelve minutes is against all my experiences as a professor and my training as a student, but I will do my best under these trying circumstances. I had an idea just a moment ago that one way we might use the cloze procedure is to study marital adjustment. It seems to me that as a man and wife get to know each other over the years, that the wife, particularly, is almost able to predict what word the husband is going to say next. So, maybe we can kind of give a cloze test once every six months or so and when your wife doesn't know what you are going to say next, you're in trouble. In other words communication is breaking down.

I have a hunch that the cloze procedure has a great contribution to make in the study of what Dr. Rothkopf calls "Learning by Reading." It occurs to me that it might very well be a fruitful approach to delete items from some portions of the reading selection and not from other portions, then to ask questions covering the different portions of the material to see if the inclusions of cloze items in some portions has some significance on the ability to answer questions on a subsequent text covering all portions of the passage. That way, you could simply delete words in some paragraphs, instead of stopping the student to ask him questions after these paragraphs.

Another aspect of learning by reading that has not received a lot of attention is the study of what might be called reading gain. This is not a new idea. Taylor used the cloze procedures to study gain in reading some years ago. He gave a group of students a cloze test and some time later he gave them the original, unmutilated article to read and then he gave them the same, or perhaps an equivalent form of the cloze to take after having read the article. So, you have a pre-cloze test, a reading experience and a post-cloze test, now by taking the difference between these measures, you hopefully have a measure of amount of learning by reading. This is clearly different from the notion of reading comprehension in the sense that we usually measure it; that is, how much you know after you have read.

Well, I was impressed by this idea and I went back to the University of Michigan and I included this procedure in my dissertation using some different materials and a slightly different administration. Like Taylor, I got significant correlations between my pre-cloze tests. And, I concluded that this was a feasible way of measuring reading by learning. But I have a confession to make: I was approaching the end of my doctoral dissertation when I had a last-minute hunch. I thought, why don't I find out what these gains between pre- and post-cloze test scores are correlated with. Because if the pre- and post-test scores themselves are correlated with a criterion test, and if I have significant differences, then the gains ought to correlate with some criterion. I didn't say anything to my chairman about this, but had the correlations run off and got zero correlations of gain and any other criterion measure. (I still didn't say anything to my chairman about it, because I didn't want to study it for the next six months.) I forgot about the zero correlations until several years later when I had a cup of coffee with a psychologist named Win Manning and he told me that a number of studies have been done on the correlates of gain as measured by the difference in pre- and post-tests and you just don't get meaningful correlates with usual gain scores.

However, Manning and DuBois had done a monograph on a technique called "Residual Gain" which promised to remedy this situation. Residual gain is measured by predicting the person's post-test score upon the basis of the correlation between pre- and post-test scores and subtracting the difference between the achieved post score and the predicted post-test score. The idea is that people approach a reading situation with different degrees of knowledge and by using residual gain you statistically equate people on the basis of the pretest. You also get rid of a statistical artifact which is produced when using crude gains; a negative correlation between initial status and gain. I gave a pre-cloze test, waited 30 days, and had the students read the article, and gave a post-cloze test. On one test I got a –.50 correlation between initial status and crude gain. Also, I routinely find in my Improvement of Reading Courses, correlations about –.50 to –.60 between improvement and how well they read in the first place. The poor readers seem to make the most improvement. That is, according to Manning and DuBois, a statistical artifact, not a real phenomenon.

In a small study that is now going on, we find that when correlating course gains with the Davis Reading Test we get a meaningless zero correlation. However, if we use residual gain we get a low positive correlation, in the neighborhood of .35. I believe that this indicates residual gain can be used with the cloze procedure to measure meaningful gain. That the crude gain score does not correlate highly with a test of reading achievement shows that the amount learned by reading is not the same as reading comprehension. I think that there are further possibilities for research in the use of the cloze procedures in the study of gain: maybe we could find correlates of pre- and post-cloze gain with grade averages to get the kinds of results that we are not now getting when we correlate Improvement of Reading grades with grades in other courses.

Wendell Weaver:

I'd like to tell you briefly about three quite different kinds of studies that we have been starting or continuing lately. One is the study which Al Kingston and I are just getting off the ground in which we take a continuous language passage and delete, by some random procedure, a relatively small number of words. At each of the deletion slots we have the subjects give all the words they can think of which fit the slot. We give five minutes for each of the deletions; so the subjects produce a whole list of words. This actually is Roger Shepard's procedure. He used this to demonstrate that if you take random language contexts (say from zero context up to 40 words of context) you get a constantly increasing constraint with the amount of context which levels out at about 40 words.

But we are using this word list and then look at a couple of variations. One technique is to present, under two kinds of treatments, the materials back to original subjects. In one treatment, the original subjects get exactly the same deletions. In the other condition, the original subject gets, in place of the blank, an underlined word which was his first or second or third word of his original word production list. In other words, what we are trying to do is to study the reliability of serial associations.

Another variation is a little more interesting, but a little bit further away from cloze. We take these word lists which were produced to cloze deletions and give the material back to new subjects: as the original subject produced it, or with the list reversed, or with the words randomly scrambled. Our measure of serial learning criteria is how long it takes the new subject to learn this particular list—which may have a shuffled order. The point of all of this is to try to get some means of relating the areas of associational psychology and of continuous language prose. We presently have very little idea about the effect of association in the continuous reading passage. So we hope by using cloze in this way to get at this problem.

Another study that Chuck Bickley and I have just started is a factorial study where under one set of conditions we have the same material presented to the subject punctuated or unpunctuated. The second condition is the reading presentation: oral reading; silent reading; or reading where the subject reads aloud only the last word in each sentence as he silently reads the rest of the passage. The dependent variable here is an oral cloze test over the same material the subject has just read. In the oral cloze test, about every tenth word is deleted and the subject reads that passage into a tape recorder supplying a word for the blanks. We are studying the effects of getting the exact word, the effects of relating the subject's word production to the entire word production of the group, (an entropy measure as Dr. Taylor calls it) and, also, the effects of the latencies for different types of passages. What we are really hoping to get out of this is that we can get the silent reader to orally produce some words from the passage, so that we can mark more accurately where the person is in the reading passage with as little interference as possible. One thing we are eventually going to do is to spread out the oral word intervals in some fashion, other than just the last word in sentences. After all, you have very long latencies when a person has to stop and read you even one word in any particular sentence.

The final set of studies is entirely unrelated to the ones above. We have just completed them, or maybe you would say we have just quit them. This set was done with Al Kingston and another colleague of ours at Georgia, Bill White. We started out by trying to look at some of the affective correlations of cloze. First, Al and Bill started out by having people read a particular story and then judge this passage using a semantic differential scale. Next, we added the 16 P.F., especially the second order factors, a semantic differential judgment of the protagonists, and a semantic differential of individual self-concept. We used cloze to delete the same passage over which the person was judging the protagonist. Essentially, we found through four or five studies, shuffling up the factors in all kinds of ways, that you get very little of the variance from the 16 P.F. and semantic differentials relating to the cloze when all of these measures are considered within the same system. What this says is that we haven't shown that there is any great kind of relationship between any of these so called "affective variables." On the other hand, we have many cases of fairly

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high relationships coming out between diads of the variables: for example, between certain kinds of *cloze* deletions, like a structural deletion and the semantic differential, whereas lexical deletions do not show this relationship. Actually, the idea of this set of studies was a more august psychological one. We wanted to look at the idea of identification which seemed to us related to the literary idea that the way a person interprets a character as he reads a story is that he puts a little of himself into the situation. He identifies in some manner. We thought, well, if he identifies this must mean that there is some kind of communality between how he sees himself, sees the character, and the kind of dependent measures we have from the cloze procedure. This is a good theory, but so far we haven't made it work. We can't find any kind of identification going on at this particular level. We haven't necessarily given up, but we have sort of moved on to greener pastures.

Eric Brown:

About a year and a half ago I first began working with the "cloze" procedure as a way of getting at the individual reader's sensitivity to literary style; and also as a more generalized probe into the nature of reading comprehension. Utilizing an introspective technique very similar to that developed at the University of Chicago in the 1950's under Dr. William S. Gray, I asked subjects to talk about what it was that allowed them to complete individual cloze deletions in a short story. Predictably, analysis of these introspective responses yielded results quite similar to those of Piekarz, Jenkinson, Squire, and others, as to the dimensions of style and comprehension within the limitations of this particular technique. My two general impressions were that oral language and the cues that oral language provides in the interpretation and understanding of language are far more important to the process of reading than is often considered, and that successful completion of cloze blanks is very often dependent upon the reader's knowledge and recognition of *expressions* in the language. By expression I mean those *immediate* contextual constraints, both synthetic and semantic, that allow the reader to say, "It just sounded right," or, "That's an expression in the language." An expression characterizes both the form and the content of the message.

The question is not whether cloze is an adequate measure of redundancy or readability in language—that is well established in the literature, nor whether cloze is an efficient instrument for determining the individual's adequacy in dealing with the language of a particular reading passage. However, it does seem that there may be some theoretical difficulties in assigning cloze test scores as measures of reading comprehension, in the usual sense of comprehension.

To illustrate, let me offer the following six-stage model of reading comprehension, freely adapted from George Miller's model of listening comprehension. The first level will presume that one can see print or words on the page and will *sample* these in a way very similar to that which Goodman (1967) describes reading comprehension as a "psycholinguistic guessing game." The reader will sample the passage, as needed, to attain the second level of *matching* the input to one generated by the reader. This generated match may be something as obvious and exact as the ability of the reader to give a meaningful oral reading of the text, or something far more approximate and consequently subtle. It is at this level that the separate abilities of listening, speaking, and reading, join into a general factor of language competence. Such generative matching might find supporting evidence in the results of certain experiments: the value of auditory feedback as shown in delayed auditory feedback studies; or the experimentation on subvocalization or implicit speech by such researchers as Edfeldt (1960) who contends that inner speech of varying intensity is a part of all reading; or the recent work in compressed speech where it is found that up to normal reading speeds listening to compressed speech is as comprehensible as reading and that at higher speeds an audio-visual presentation of material results in better comprehension than either listening or reading along. (As a matter of interest, let me note that Dr. Murray Miron and I at Syracuse are presently working with compressed speech tapes the upper limits of which are approximately 900 words-per-minute.)

At the third level, if a reader can see and match an utterance, we now may ask if he will *accept* it as a sentence in terms of his knowledge of grammar. The parallel I find in the cloze procedure would be the ability to match the grammatical category of the deletion in question. This does not seem to be a problem for the mature reader. It would serve as the base, or lowest level of a test of syntactic ability.

At the fourth level the reader must *interpret* an utterance as meaningful in terms of his semantic system. This I presume means, that given an adequate syntactic structure, how word meanings interact in "Healthy young babies sleep soundly" is different from in "Colourless green ideas sleep furiously." And, that the two utterances are differentially easy and difficult to recall or recode. It is at this level that cloze most effectively samples. For anything beyond this level of processing must certainly involve some recoding or "chunking" both for comprehension and storage; whereas the cloze procedure usually asks for an exact match, both syntactically and semantically of the writer's language.

This still leaves us with the possibility of scoring synonyms. That is, in a theoretical model of cloze, a synonym could be accepted as an acceptable response. Exact word scoring is usually only a matter of statistical equivalence or scoring ease. Synonym cloze is probably measuring the reader's full language competence, such that to the extent that the language of the passage (semantics, structure and style) poses no difficulty for him, he is free to *understand* the passage —the fifth level of the model. Miller says understanding frequently goes beyond the linguistic context of the utterance itself. An example would be the use of sarcasm or irony in language, where one means something more than what is immediately interpretable from the linguistic environment. It is this level of understanding (inference, generalization, and application) that I would term comprehension. Adequate language functioning or interpretation is a necessary prerequisite to comprehension that cloze measures, but an act essential to comprehension and prior to it.

Miller goes on to delineate a sixth level of *belief* in an utterance. His example is, "The child who says 'I saw five lions in the garden,' may be heard, matched, accepted, interpreted, and understood, but in few parts of the world will he be believed."

Cloze tests do, in fact, correlate highly with standardized reading comprehension tests, so that descriptively the instrument may be viewed as an adequate reading comprehension measure. Of what use then is an explanatory model? The answer has to be that an explanatory model can focus attention on research areas that perhaps have been previously neglected, and that such a model tends to unify or organize research about a central thesis. For example, one would predict from this model that further discriminations of comprehension ability might be determined at levels higher than tapped by cloze. That is, we may yet find some measure that will show us some differentiation in higher-order comprehension between two readers with equivalent cloze test scores.

It would also seem to me that an adequate theory would have direct implications for training reading comprehension and for evaluating reading improvement methods. For example, if Goodman's sampling notion should hold true, and therefore skill in reading involves not great precision but more accurate first guesses based on better sampling techniques, then the assessment of comprehension may be modified. This explanatory model could also be used to ask questions such as: What is a visual reader? What does this generative model of reading say about the relationships between speed reading and speed listening?

DISCUSSION PERIOD

The following is an abbreviated transcript of the discussion that followed the papers.

Wilson Taylor (St. Elizabeth's Hospital, Washington, D.C.) [Ed. Note: Dr. Taylor coined the word "cloze" for use in an article published in 1953—*Journ. Quart.*, XXX.]

I am flattered that a notion of mine has caused so many people to do so much work. The last speaker defined cloze procedure as calling for exact match of the replacement word and the original word. I do not now define it so narrowly. I admit that I started using it that way, because the first article I wrote was on readability. In that article, I compared scores by exact match and scoring by synonyms and found that it made no difference in the relative score. So for readability I concluded that you might as well score by exact matches as by synonyms.

Since then, I have come a long way and I now consider cloze procedure to be defined about as widely as any possible deletion procedure. A deletion procedure also involves insertion to close the gaps, so I still call it cloze procedure. Thus, there can be at least four different criteria for scoring cloze responses. One of these four methods is criteria scoring; and one method of criteria scoring is exact match. So you can see that I am expanding my original statements considerably.

Criteria scoring means you make a decision about what you are going to count as right. Now one such decision would be that it has got to exactly match the original word. Another decision would be to credit synonyms. You could also say we're going to allow any part of speech that is correct. In "I heard a————" the blank requires a noun. We might say that we will allow any nouns to count as correct. In other words, criterious scoring has many possible levels. Is this valuable? I would say yes. In foreign language teaching maybe. For example, an English-speaking person trying to learn German usually has trouble finding out where the noun is, where the verb is, and so forth. You have to look all through the sentence to find them. In other words, German has a different kind of grammatical tune to it. If you knew, even without vocabulary, that this thing that is blanked out had to be a noun, you'd know something about German that you didn't know before.

A second scoring procedure might be communality, or inter-agreement scoring. In inter-agreement scoring you pay no attention to what the original word was. You've got maybe ten people who make guesses for a cloze blank. If they all guess the same thing, you've got perfect inter-agreement among your guessers, and in the sense of entropy, you don't have any: you have complete redundancy. I also call this "focus"; everybody is completely focused. All the guesses use the same alternative, the same word guessed. If six out of ten people guess the one word, three guess another, one guesses another, the agreement would still be pretty big, but it isn't complete. If you have ten people guessing a blank in which the context tells you little about what to put in there, you might very easily get ten different answers. You have a possible outcome of ten different answers: this would be no focus at all. This would be maximum entropy.

A third scoring method would be latency. I am involved in this area now. I have blanks which take out words which are unique. There is only one word you can put there. "What is the matter ———you?" What can you put in the blank besides "with" that is rational? We show a guy a card which has a sentence on it with a blank; "which word goes in the blank?" We accept no word but the right word. All we measure here is the latency. How many seconds did it take him to produce the right answer?

A fifth way of scoring would be to make up a very tough passage where no one could guess the word. Then say, "We'll pay you a nickel everytime you guess right. If you don't want to take the chance, don't guess and you won't win anything and you won't lose anything. If you guess wrong, it's going to cost you a nickel." We've got it loaded so he isn't going to win, then all we do is count the number of times the guy dared to guess. This might be a measure of his gambling instinct. This is just another way of scoring.

Question: Dr. Weaver, in your work on self-concept and cloze, did you manipulate the content in terms of subject matter so there was a possibility of greater or lesser identification? Novels for example.

Weaver: We did have different stories, but the material was mostly a *Readers Digest* variety of biographical studies. The trouble with novels is that a lot of the college students don't understand the story. And if you want to get the full range of abilities you have to have materials the subjects can understand.

Ruby Martin (South Carolina State College at Orangeburg): Last year in a study looking at generative grammar and cloze as training procedures in the classroom, I used two experimental groups of Negro college students at S. Carolina State College. We subjected 50 students to *Transformational Grammar* (developmental edition by Roderick Jacobs and Peter Rosenbaum, Ginn and Company). We subjected the other 50 students to cloze exercises. The study lasted 18 lessons, during a 9 week period as a part of a freshman English course. The dependent variables were listening, writing, and reading. I used the *Iowa Silent Reading Test*, the STEP listening test, the STEP writing test, and actual writing samples pre- and post-treatment. The cloze student's task was to fill out the cloze exercises for about 20 minutes of each class period and then to discuss the reasons for their choices. We did no scoring at all. At the end of my study I found that the cloze was a rather unorthodox group. They made gains in recognition of linguistic structures while the transformational grammar group did not. On the STEP writing test, which is the objective measure, the cloze group also made gains in paragraph meaning, word meaning and selection of key words. The cloze group made a significant gain in listening while the transformational grammar group did not. In comparison with a control group the cloze group was superior in writing, and listening. The transformational grammar group was also superior in writing, but not in listening when compared to the controls.

Rankin: Greene and I have a study underway which I'll just mention briefly. We are making a study of reading flexibility using the cloze procedure a little different way. This is done both before and after a reading course among a group of poor readers at the college level. The students read through an article of about 2,000 words and at every fifteen seconds I gave a signal. The students were instructed to underline the word that they were reading when the signal was given. With the same article, I used cloze procedure on another group to measure the readability of each successive 100-word sample in the article as a whole. We have a measure of readability of the first 100-word sample, the second 100-word sample, and so forth all the way through. The number of words read per 15 second interval was converted into the number of 15 second intervals that each student took per 100 words. Flexibility, thus, becomes defined as the correlation between the number of 15-second intervals per 100 words (rate measure) and the difficulty of the 100-word passage as measured by the cloze procedure. Presumably, a flexible reader would show a higher negative correlation between rate and difficulty than a less flexible reader. I don't know that this method of studying flexibility has been used before. It is a little trouble, but it may produce some results which have not been obtained on previous studies. We've run through just a small sample and on a mean basis, both before training and after training. We got a low negative correlation −.307 between difficulty and rate before training. After training (a 15-week course of training in developmental reading) the magnitude of the negative correlation increased to −.454, which would indicate an increase of flexibility as a result of training. We also are going to study flexibility in a different way, namely, as measured by the standard deviation of each subject's sequence of rate scores. This is a more common concept of flexibility, the idea being that the greater the variability in rate, the more flexible the reader. We will look at the relationship between these two kinds of rate flexibility on these same subjects, both before and after training.

Another study that I have going at Texas Christian University relates cloze and context clues. A study was done last year using a group of doctoral students to locate the context clues used to complete a cloze blank. The students were interviewed and about 14 or 15 types of context clues resulted. We now have a computer assisted instruction unit at T.C.U. and I want to try to teach people to use these types of context clues. There are possibilities here for using immediate reinforcement, remedial loops, etc.: all the flexibility the computer has for programmed instruction. We decided we would try it with children and then we wondered. I wonder how many of these different kinds of clues fourth or fifth or sixth grade children can respond to. They may not be able to respond to all of the 15 types of clues at all. So we thought we should do a pilot study using the cloze procedure to find out the types of context clues the children are sensitive to. We're going to try to select or write short passages with only one word deleted; the context of the deletion will have to be such that one and only one type of clue is available. We're not sure that we can do this, but we're going to try. If we can, then we will be able to build up a number of passages illustrating one type of clue and other passages illustrating another type of clue. If the children can predict the word, or maybe a synonym, then we will know that they are sensitive to that clue, because there will be only one type of clue present.

David Wark (University of Minnesota): I would like to share another application of deletion techniques that some of you may find interesting. In the reading improvement program at Minnesota, I've been trying to help the students increase their reading rate in their own textbooks by keeping graphs from day to day. If they do these little exercises, they usually report some gain in rate. However, at a certain point they become worried about comprehension. They want to take a test. Their requests bothered me for a while because, of course, they were justified. I decided to try a kind of cloze. I suggested to the students that they take a file card, cut it into a strip of paper about six letters wide (measure the width of the word "and" twice and cut a strip of paper that wide), and then put the strip of paper over the middle of the page. Presto, they had a different kind of deletion. They had approximately one word deleted per line, but it was right down the middle. They could get immediate scoring, of course, because they guess what word is under the mask, pull the mask down, and if they are right, put a little check in the margin. At the end of ten lines, with the possibility of ten checks, it's no trick to convert the number right to percentage. The students thought this seemed to answer their need for a formalized, systematic way of measuring comprehension. Of course, I don't know anything about the distribution of scores like this, nor do I know how valid it is. I did prepare some pages out of four or five textbooks, with this deletion down the middle. We merely masked off the middle of ten lines, xeroxed the page, and then had the students cloze. I made the distribution of scores and found, interestingly, that a physics text seemed to be easier to cloze than a short story from H. G. Wells, or material on Latin-American history or biology. Apparently such science material tended to be more redundant than literature or history. I don't know whether this result will replicate but it is worth trying.

I present this technique as an interesting way to make quick, do-it-yourself comprehension cloze items. I suppose that somebody will come out with a little plastic strip and try to sell it for 75c. Therefore, I now formally put this idea into the public domain.

Larry Hafner (University of Georgia): I'm doing a study by taking the guts out of words in various ways coming up with true configuration clues. This is not in context, just for single words. I took the WISC vocabulary list, for which the degree of difficulty is known, and made several different kinds of deletions with the inner parts of the words, so you would have a configuration and not just a blank. You have the top of the n, and the o, and things like this which make a true configuration. Relating this to reading comprehension measures, to the Bender Gestalt, and various other measures, I think we will get some interesting results. This is being done with a group of 4th grade children. We are also relating it to the graphemephoneme relationships in these words. It's not the passage context: it's the content of each word.

Elneita W. Stewart (Texas Southern University): I conducted a study of two comparison groups designed to determine whether knowledge of structure of language would be of any value in the improvement of reading. There were students at Texas Southern University who have some reading disability. The group with which we used *College Reading Skills* by Austin et al. did not show any significant difference from those with whom we used cloze materials deleting each fifth word.

Taylor: I'm now in the process of doing a book on cloze procedure. I would like very much to get copies of any research reports, technical reports, or theses concerned with cloze. I would at least like references to them so I can look them up. I want to see anything anyone has done with cloze. My address is Dr. Wilson L. Taylor, Behavioral Studies, St. Elizabeth's Hospital, Washington, D.C., 50032.

I would like to address myself to this reading gain problem. There are really two things to be considered. The essential one is that if you get a guy who makes a high score, let's say he gets 80% of all the blanks right, he isn't ever going to get a score much better than that, even on stuff he wrote himself. Now, if you had someone who had a complete visual memory or something, they might remember every word they wrote. But I've tried it myself. I can put blanks in stuff I wrote and get about 85% using exact scoring. If the reader is intelligent or good at style or knows the subject, and he gets a high pre-score, teaching him isn't going to change his post-score much: it can't. The guy who gets 40 out of 100 can move up to 60, or 80 or even 90. Look at this, it's tremendous! But the guy who got 90 in the first place isn't going to move much.

The second thing about gain is that there can be a gain score that has nothing to do with knowledge of content. In one article, the

Air Force study, I assumed that when taking the same cloze test twice the first time was no particular preparation for the second. In other words, if I gave something with a blank in it, you guessed at it, and I didn't tell you if you were right or wrong. Two weeks later I asked you to guess again. Has any learning occurred? Without intervening study, do you see what I mean? Well, I thought maybe there was a loophole in the Air Force study. So I took the Air Force forms and used undergraduate students at the University of Maryland. About 40 or 50 of them filled out all of the blanks, just as the Air Force trainees had done and that was all there was to it. Then two weeks later they filled them out again. Now, to my surprise, I found a significant increase. All I can say is that the first exposure to this material, this filling in the blanks apparently taught them something about the phraseology or the vocabulary involved which showed up as an improved score the second time they took the test. The difference was not so great, but it was there.

Rankin: The beauty of residual gain is that it gets rid of this artificial negative correlation. I have used residual gain, for example, in my college reading program to grade students on improvement. I use a graphic method, which is in my recent article, and I find that if a student starts out with a high reading score to begin with I don't expect him to make much gain. He can make an A with very little improvement. Whereas, the students who start out with a very low reading score to begin with have to improve much more in order to make an equivalent grade. The residual gain measures takes this into consideration.

Bloomer: I guess some of you know I tortured a group. I gave them 24 of these cloze passages all in sequence, one every two days. And I found the same effect that Wilson was talking about. At the beginning you got increases in scores although they never saw their papers. They just did the papers, handed them in and that was the end of that. And then, when you got past the 13th or 14th exercise you began to see those scores trickle down. I suspect that boredom was working.

Question: Could the students possibly be visiting with each other after the test, saying "Well I answered the blank this way; what did you say?" And after some time, feel, "Well, what's the use, he's not really going to do anything with this anyway."

Weaver: You can simply have the students read a passage and that's all they do. They read it once and two days later, one-half the group reads it again and the other half doesn't. You get improvement in the scores just from the reading. It seems to me that there is enough actual content that you can learn from there. So you could parsimoniously explain most of the increase in other scores on the basis of content.

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Ernest Rothkopf (Bell Telephone Laboratories): I think there is some constraint operating in the latter proportions of the passages which is not present in the earlier portions. When you are guessing, the first time through, these constraints probably don't operate. But having exposed yourself to them, the second time they might work.

The cloze procedure is a very convenient method of constructing a test and I think that convenience is really the big word with me. It's hard to produce anything like a rational test, if you want to measure what people learn from a written passage. And so we very commonly use cloze procedure to test how effective some treatment is. I don't use anything like the kind of deletion ratios most people use, because it's more economical, as far as time is concerned, to delete on a non-random basis, substantive words out of a passage. You get a better score that way; it doesn't take as long; and if you are trying to find out how effective something is, it's enough. The problem that I have is, if you want to go and develop let's say, a technology for producing written materials that will teach well and you want to try various methods of presenting the same materials, then you suddenly get caught in the problem that you can't use the cloze procedure any more. Obviously the cloze procedure depends so critically upon the materials themselves that you can't use a test of this particular kind to directly compare these methods. And, it occurs to me, in trying to solve this problem, that one solution might be to use a reference document where you might compare several different treatments of some subject-matter and the use of a cloze technique with some other document. For example, if you have seven different ways of talking about the Bill of Rights then you might actually use the Bill of Rights, with deletions in it, as a reference document, to see what people learned about the general content.

I wonder if perhaps you have some other ideas, some other ways besides a reference document of how one might use cloze along with several ways of treating the same subject matter.

Weaver: I agree you need something. I've fooled around with cloze enough to know that you have reliability problems. It's not as easy as it seems to just sit down and delete any passage with a small number of words and get anything like adequate reliability. In fact, we did this with about 16 passages with different kinds of conditions. We deleted 20 items randomly: the highest reliability was .25. I think you have to build cloze, if you're going to use it over some time the way you do any test. You've got to be sure of your items. I think this is what our results are saying.

Rankin: It is interesting that both Cranney and Greene found that by using some of the more conventional ways of constructing a test where you do analysis, etc.—that you don't necessarily produce a better test. After all the item analysis work, Cranney's validity correlation isn't really any higher. Instead of using just an every *n*th deletion, Greene tried to select words which he assumed could be predicted with some degree of reliability, and after going through this trouble he got a little better technical criteria for the test, but still the validity of the test wasn't any better. By doing cloze construction in the easiest way, we get just about as good results as by doing it harder ways. We have to put up with this fact, that a lot of the items aren't going to be discriminating and we have to have a pretty long test if it's going to be reliable.

Taylor: Cloze scores, if you score them by the exact word criteria, are sensitive not only to your knowledge of the content of the material, but are also sensitive to the form. Let's talk about a second language. If you have foreign students who know English pretty well they will do much worse on function words, particularly prepositions, and some uses of adverbs. Most of them never quite conquer these function words. Where we would say, "He went up the stairs," if you blank out "up" a lot of them will put "on." "He went on the stairs." We have a lot of these form problems that we don't realize until we start pulling them out.

Another problem is onomatopoeia. In one case I used "Chickens cackle and ducks quack." Now those who grow up knowing English have no trouble with this, but a very brilliant Viennese scientist who speaks English excellently couldn't do this at all: Chickens cackle, and——quack. What's quack mean? In Hungarian they have a different word. If you take somebody who grew up and knew a language and if you have a blank that depends upon knowing that cats meow and cows moo and so forth, they can't handle it. They will make a lower cloze score, not because they are stupid, not because they don't understand the content, but for stylistic reasons. As some of you may know, I once used some James Joyce from ***Finnegans Wake.*** It is a perfect, almost complete nonsense passage. He wrote, "Chickchilds, comeho to you, Come home to yoo, wee-chickchilds doo." I blanked out the second "yoo." What happened—eighteen people guessed on this; six of them got it right. How do you explain this? If you used parallel construction, you would put "roost" in there, but nobody did. Six people put in "yoo" and this is pretty good. There is something that is stylistic in cloze, by exact scoring.

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Why Bother to Teach Critical Reading Skills to College Reading Classes?

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Over forty years have passed since the inception of instruction in reading skills for college students. During nearly five decades we have seen many changes in both the requirements for successful college work and the expectation of curriculum instructors. More students are required to have depth of understanding in more areas of learning than at any other time in history. We are told that the accrued total of learning doubles every eight years. If this statement is true, then many of our students will need to have better techniques for study than they are getting at the present time.

What reading skills will your students need to be able to perform adequately tomorrow? Next week? Next year? Ten or twenty years from now? Can we know for sure? Generally, we can predict most of their reading needs for the future. However, we cannot predict with absolute certainty. Perhaps the skill most useful of them then will be the one most neglected.

To begin my treatise, allow me to discuss the years students have prior to their college experiences. Since the reading classes usually taught in college today are the result of failures in skill development of earlier years, it seems appropriate to discern what work has been done in the teaching of critical reading skills at this earlier level. I want to start by giving you my first assumption. *Elementary and secondary reading teachers believe that critical reading skills can be taught to their classes.* It seems that this assumption may be the key to what I am trying to accomplish in this paper. Williams (15) reported a study in which ten different basal series were surveyed to determine what critical reading skills were incorporated with the skill development of these texts. She found no less than 33 skills that she interpreted to be critical reading skills in the total accumulation of the ten series. Of course, not all 33 appeared in any one series and the number total per series varied. The point to recognize here is that effort has been made toward teaching critical reading skills.

In preparation of this paper several years of back issues of journals devoted to reading have been reviewed. I found several instances where some instructor or researcher has set up a controlled study to determine the success or failure of his effort to teach critical reading skills in elementary classrooms. You may think that these skills are more appropriately taught during the elementary grades. Perhaps, teachers can construct easier situations where the class can function with a research procedure in an elementary classroom. However, we need to look beyond the elementary classroom to the secondary school to find what efforts have been made at this level. What do we find reported in the literature? We find practically the same thing. In fact, although I did not keep a tally of the research efforts for elementary and secondary, it seems that more effort was placed in the teaching of critical-reading skills at the secondary level than at the elementary level. Each year Robinson and his co-authors (10) have reported the research of work done in reading at the secondary level. Some aspect of critical reading has been reported for the last eight years. I believe that the evidence reported and much more unreported here supports my first assumption. Without question efforts are being made to teach these skills in elementary and secondary classrooms. Many secondary and elementary teachers believe that critical reading skills can be developed by their students and report that this is being done.

My second assumption should be an affront to most of us here today. It follows. *Members of the National Reading Conference do not place a proper emphasis on the teaching of critical reading skills.*

A study of the yearbooks since the inception of the Southwest Reading Conference (National Reading Conference), to my knowledge, has not reported one research in which an investigation of critical reading skills has been the main focus for consideration. Surveys, methodology, problems, descriptions, and evaluations were the main topics considered for several years. We were unable to find one article at the college level where critical reading was the prime topic to be considered in the research reported by Bliesmer (3).

The early conferences rightly were occupied with the practical applications of "how to" organize and institute a college reading program. Later conferences shifted to the direction of more intellectual aspects of college reading. William Eller (4) reported in 1956 that "the present concern is with the more intellectual comprehension skills—the ones that are essential to high-level comprehension. . . ." Although Eller's report gave promise, there is little indication, if any, that this concern was actually taking place in the college reading class. A search through all the yearbooks, without exception, fails to show a controlled study where an effort was made to develop critical reading skills by a college reading class instructor. Yet, during many of these years Eller and others reported ways to organize and teach critical reading in college reading classes. It is as if at meetings college reading instructors were saying "Yes, we believe that there is a skill known as critical reading but this has no place in *my* college reading classes."

Now, let me state my third assumption. *College reading teachers do not teach critical reading skills.*

Our sister organization, the College Reading Association, in which many who are present here today have membership, has had annual programs for several years where the teaching of critical reading skills was discussed, planned, and encouraged. Martha Maxwell (8) in 1963 made a call for higher level study skills, including critical reading. She recognized the paucity of work-books and materials delineating skills necessary for more advanced students. Can we see any significant change today as a result of this clarion call? I confess that I have been unable to find much change. In 1965 Walter Pauk (9) listed 20 specific reading skills students must master if they are to be critical readers. Have these factors of critical reading skill development been employed to implement programs in which critical reading was the chief objective? It seems to me that college reading specialists could use some of these skills suggested to start with in preparing and reporting studies in critical reading. Yet, where are the programs that are placing a major emphasis upon the development of critical reading skills?

I may be belaboring this point but the 61 doctoral dissertations in college reading from 1918 to October 1960 (13) reported in Summers, 1961 did not have one title where the major emphasis was to research critical reading. No, I do not feel that my assumption has been made carelessly. College reading instructors, in general, do not bother to teach critical reading skills in their college reading classes. At least critical reading is not a major emphasis of instruction.

We have been looking at all of *those other* instructors up until now. Let us look at ourselves for a few minutes. You have come here from various colleges and universities across the nation. You have left your classes to be present here today. Did you emphasize some aspect of critical reading skill development in your classes this week? How about last week? Have you emphasized critical reading skill development at all this semester?

To leave this paper at this point would be the same as reciting what has been done before. Perhaps, even what I say now has been said before. If so, it needs to be said again and again until we become cognizant of our own responsibility. Critical reading is the logical extension of structural skills and follows the interdependent structural skills. In our reading classes, somehow, we never get to the level of teaching critical reading. This may be due to the fact that our major efforts have been devoted to a salvage operation. Yet, this writer (7) in reporting on research conducted in 1963 found that over 40 per cent of the students in his study were, when admitted to college reading classes, at average or above average reading ability. Logically, these 377 students could have profited from much emphasis upon learning critical reading skills. Why are we failing to provide for the needs of the top two-thirds of our classes? Is our failure to teach critical reading skills in our classes due to the fact that our atmosphere in class is not loaded with meanings and suggestions and a time for interpretation?

Heilman (6) recognized our need in this area, as have others, when he wrote "failure to deal with how to teach critical reading has for years been the stumbling block of college-adult reading conferences and publications." Again, this year we face this issue. I submit that many college reading class instructors know how to teach critical reading skills but are afraid to tackle the task of implementing it in their classes.

As in many areas of study, a high intelligence does not guarantee that a student has already achieved the ability to think and read critically. Critical reading can be taught, but to know how to teach critical reading is not enough. Students need training and guidance in its use. Eller (5) comes to our aid when he lists several broad implications concerning critical reading. One implication is most appropriate to what I am trying to foster. Eller writes that "research workers who are specialists in reading instruction should conduct experiments which parallel many of the studies cited. . . ." He refers to higher order comprehension skills. Merely making an assignment in a workbook that pertains to critical reading skill development is one way an instructor fails to demand a high quality of reading.

Beasley (2) reported a study as far back as 1959 in which he identified critical reading development as one of eight principal objectives in the study. This one study reported in a reading journal should confirm to us that this type of research can be planned and implemented.

Five studies pertaining to some aspect of critical reading have been reported (11) in the two volumes of the *Reading Research Quarterly*. These studies were conducted in college classes by people not known as reading specialists. These studies were reported in journals not known as reading journals. Does this mean that reading specialists are not concerned, or so little concerned, about the teaching of critical reading skills that other areas of professional training are taking up where we have abdicated our responsibility? Perhaps, it does. However, it is time that we resume our responsibilities in this area and start immediately to rectify our negligence by planning programs where critical reading is given more emphasis. You do not need me to tell you how to teach critical reading skills. There has been more than enough written on how to teach critical reading skills at college level. What we need is more people with enough courage to try.

Let me conclude by paraphrasing Artley (1), "The level the student sets for himself in reading critically will be as high as his reading instructor helps him set it."

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An Experiment in Adult Reading Improvement

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Although there were a number of reports of research in the literature dealing with descriptions of adult reading improvement program effectiveness, very few had carefully controlled comparisons between a machine versus a non-machine approach in a formalized and structured program. Indeed, Rosen states in a recent review of research that there appears to be a paucity of scientifically controlled research on the efficacy of the utilization of machines intended to improve reading rate with undifferentiated student groups. Reports by Irvine, Mayhew and Weaver, Spache, Standhee, and Ziemann appear to be the most significant investigations making a similar kind of a comparison. Consequently, this paper is concerned with the relative merits of two adult reading improvement programs conducted in the same fashion by the same teacher with one group receiving machine instruction and the other no machine instruction.

Appraisal of a comparison of such programs may indicate which approach is more beneficial and what changes may be necessary to improve adult reading programs. Generalizations from this study are feasible since the population sample is a random one and, therefore, representative of the adult reading population universe except for the chronological age and education variable limitations as stipulated in the description of the sample.

THE STUDY

This study is an appraisal of the efficacy of two approaches to the teaching of adult reading improvement. The adult students in the programs received the same basic instruction except that one group, group B, received additional machine-aided instruction.

There were three null hypotheses considered:

1. There is no significant difference in vocabulary growth between those students who had machine-aided instruction and those who did not.
2. There is no significant difference in comprehension growth between those students who had machine-aided instruction and those who did not.
3. There is no significant difference in rate growth between those students who had machine-aided instruction and those who did not.

THE POPULATION

The sample was selected from a total of over one hundred applicants for four distinct reading improvement classes, to be conducted by the same teacher. The students were selected on a random basis by listing those who applied for a given course on a sheet and then taking every other one until a class of fifteen was obtained. Sixty students comprising four separate classes were so selected. The range in age for the total group was from nineteen to sixty-three years. The mean age of the total group was 39 years. All of the students were working full time and all had completed two or more years of college. There were twenty-one females and thirty-nine males in the sample.

The students attended classes for sixteen weeks on a two-hour basis, once per week. Classes were conducted by the author and were offered through the College of William and Mary and the University of Virginia Etension Division. The classes took place during the school years 1965-66 and 1966-67, at the rate of one class per semester. One semester a class was given machine-aided instruction and during the second semester, no machine-aided instruction was offered.

The students involved were given the Nelson-Denny Reading Test Form A as the pretest and the Nelson-Denny Reading Test Form B as the posttest. The Nelson-Denny test concentrates on three specific areas: vocabulary, comprehension, and rate. At the beginning of each class the students were apprised of their test results and were given an indication of the type of instruction they were to receive. The cut time test norms of the Nelson-Denny were used so that age levels would not bias the sample. Validity index and reliability coefficients for the test are reported by the authors to be 46.5 and .92 respectively.

METHODS OF INSTRUCTION

Both groups, the experimental group, labeled B, and control group, labeled A, received a program of instruction suggested by Dr. Emery P. Bliesmer, Professor of Education at Penn State University and Director of Clinical Reading Services there. The students were informed that the primary objective of the course was to improve rate and comprehension. In order to do this, an individualized approach was utilized. Students were informed that each should attempt to double his then current rate as indicated by the Nelson-Denny Reading Test and at the same time develop and/or maintain at least 80% comprehension of the material covered.

In order to accomplish this a number of materials were presented to each individual. He was asked to do at least one exercise and preferably two, from each of the materials during the weekly two hour session. The materials utilized included *Approach To College Reading* by E. L. Jones, *Reading Improvement for Adults* by P. D. Leedy, *How to Read Better and Faster* by Norman Lewis, *Better Reading Books* 1, 2, and 3, the *SRA Laboratory* IV A, the *SRA Reading for Understanding*, general box, and Doris Gilberts' *Power and Speed in Reading*.

Each student was given a number of answer sheets so that the preceding list of materials could be used in a nonconsumable fashion and a number of progress charts so that each individual could keep personal note of his progress throughout the course. The participants were asked so to divide their time that they could do at least one lesson from the materials each night of the formal session.

During the first few weeks of the course the main purpose of the activities was to aid the student in developing some regular practice habits and some special reading habits. They were asked to practice regularly, consistently, and with some intensity. This was accomplished during the formal class sessions by presenting the students with appropriate discussion of reading skills and a practice program for work they were to do during the time between formal class sessions.

In the home sessions, the students were asked to spend at least 90 minutes a day practicing in pushing themselves to read faster in materials of their own choosing. They were requested to select material which had uniformity and length or continuity. A hardback or paperback was suggested as being the most suitable, that is, a novel in which they were interested in reading but which did not deal with their profession. This was suggested in order that they would not feel pressured or emotionally involved in the selection.

The participants were asked to divide their reading practice into three relatively short sessions during the day rather than one long one. They were instructed, as they read in the material, to keep reminding themselves of their intent to read a little faster than they had been reading previously. They were requested to use their index finger as a pacer by moving it down the middle of each page at a relatively uniform rate fast enough so that they were required to "huff" a bit to keep up with it. After every two or three pages, they were told to stop briefly to get the gist of what they had just been over and if they found that their recall was too skimpy or otherwise unsatisfactory to quickly reread the pages. They were instructed to finish their practice sessions each time by doing two selections (beginning with the easy section) in *Brown's Efficient Reading* and to use their answer sheets and progress charts for recording answers and scores.

In addition to the preceding instruction, the experimental group B also received machine-aided instruction. In the formal session this consisted of a tachistoscopic session lasting approximately five minutes and a controlled reader session utilizing films at the high school-college level, i.e., Album MN of Educational Developmental Laboratories. The readers saw one film each session and then answered the comprehension questions at the end of the film and recorded their rate and comprehension scores on a progress chart. During the formal session group B was also asked to follow up the controlled reader session by doing an exercise from *Better Reading Book, 3* with the idea that transfer would take place.

For the home sessions, Group B received a rateometer which they were asked to utilize with their paperback or novel at least 60 minutes per day. It was suggested to the students that they set the instrument at each practice session so they would be forced to read a bit faster than they had during the previous session.

The lecture period was the same length of time for both groups and was of approximately ten to fifteen minutes duration for each formal session. During this period questions were answered concerning the exercises students had been doing at home. The weekly lecture periods also included time for the stressing of certain major points presented both singly and in combination. These included getting the main idea, reading for details, the use of the SQ3R Technique, development of general vocabulary, the ability to skim both for continuity and for detail, methods of making notes, and reading for specific purposes.

It should be noted that although the Nelson-Denny is not a diagnostic instrument and consequently does not lend itself well to the individualizing of instruction, it does indicate a relative position on the learning continuum with regard to general reading proficiency. As a consequence, individualization within the program described was largely predicted upon instructor aid and observation of the various students comprising the classes.

RESULTS

Results indicate a general statistically significant gain trend in vocabulary, comprehension, and rate for both groups. Specifically, group A showed an average growth in vocabulary of 34%, in comprehension 22%, and in rate 42%, while group B demonstrated an average growth in vocabulary of 40%, in comprehension 17%, and in rate 36%.

Analyses of variance techniques for equal groups as proposed by Wert, Neidt, and Ahmann were applied to both groups.

The formula utilized was $SS_T = XX_m - \frac{(X)^2}{N_2}$

For groups: $SS_G = \frac{(X_1)^2 + (X_2)^2 \cdots (XM)^2}{K} - \frac{(X)^2}{N}$

For within groups: $SS_W = SS_T = SS_G$.

F scores of under 1 were found for both rate and vocabulary. An F score of 3.98 (with 4.01 as significant at the .05 level of confidence) was obtained for comprehension. Hence, the following three null hypotheses were all accepted:

1. There is no significant difference in vocabulary growth between those students who had machine aided instruction and those who did not.
2. There is no significant difference in comprehension growth between those students who had machine aided instruction and those who did not.
3. There is no significant difference in rate growth between those students who had machine aided instruction and those who did not.

Consequently, the difference between the machine aided group B and the non-machine aided group A resulted from chance. However, it should be noted that differences with respect to comprehension between groups were almost significant at the .05 level of confidence. This may suggest possible additional research in this area.

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Effect of a Short Term Summer Reading and Study Skills Course on College Bound Disadvantaged Students

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Program Description

The University of Pittsburgh and the Pittsburgh Public School sponsored a six weeks summer program on campus for culturally different students from inner city schools. The program was designed to aid the selected students in acquiring academic skills needed for successful college work. This program included courses in English, mathematics, political science, and reading. In addition, a number of social and cultural activities were included in the program.

The basis for selecting students for the program included the following criteria:

1. Recommendations by the principal, counselor, and teachers.
2. Statistical evidence of intellectual capacity to do college work (measured intellectual capacity).
3. Evidence of some achievement as reflected in student's achievement test scores.
4. Good physical, mental and emotional health. (This was determined to some extent by a private interview conducted by a member of the program staff, usually a guidance counselor.)

Fifty students were selected for the program, forty-eight 11th graders and two twelfth graders.

Program Schedule

The fifty students enrolled in the program were divided into two instructional groups of twenty-five students each. The two groups attending morning classes in English, mathematics and political science. These two sections were also divided into smaller groups to attend counselling sessions. The sessions were held by schedule for group counselling and by appointment for individual counselling. A group of seventeen students from the fifty was selected to receive instruction in reading. Due to the scheduling of other activities, the students attended reading classes on two alternate evenings in groups of eight and nine students. The total instructional program in reading consisted of thirteen two-hour class sessions or a total of twenty-six hours of instruction.

The Instructional Program in Reading

The instructional program in reading and the study skills was divided into four basic elements: vocabulary study, comprehension and rate practice exercises, independent learning activities, and activities related to the development of reading interests.

For vocabulary study Funk and Lewis' well known paperback book, "30 Days to a More Powerful Vocabulary," was used as a text. It provides a series of stimulating exercises which required the students' daily active involvement in learning. The author of the text suggests that the student read the book with a pencil in hand. Lessons from the text were followed by a series of biweekly test and discussion sessions for oral review and reinforcement.

Flexibility of rate was introduced as the key concept in the rate comprehension lessons. Nevertheless, instruction was given and related to other basic reading processes which were considered essential for successful college work: i.e., organizing a schedule, utilizing a systematic method for reading study material, setting purposes for reading, surveying material, and adjusting rate to the content and purpose of material. In addition to introducing and practicing the Survey, Question, Read, Recite and Review technique on home assignments in mathematics, political science and English, the students were provided with a number of different reading textbooks for practicing a variety of reading skills. Among the better known texts used were W. Baker's "Reading Skills," Berg, Frackenpohl and Taylor's "Skimming and Scanning," Hill and Eller's "Power in Reading," Niles' "Tactics II Laboratory," McCall-Smith's "Reading and Reasoning," SRA "Reading for Understanding," and McCall Crabb's "Standard Test Lessons." After the introduction of these various materials and interviewing the students, specific materials were recommended for individuals. The recommendation was based on the instructor's view of the individual's reading needs and the student's perception of the utility and value of the materials.

Of the lessons taught during the summer course only three were devoted exclusively to improvement in rate of reading. In these lessons both the tachistoscope and the E.D.L. Controlled Reader were used. These instruments were used to illustrate the possibilities for rate improvement and to motivate the students. The limited emphasis on rate exercises seemed justified in terms of the students' greater need for improvement in comprehension skills.

The sessions devoted to independent learning activities were initiated with an introductory discussion and assignment on organizing a daily schedule of activities. In addition, a number of lessons which utilized both films and tapes were directed towards the improvement of a systematic method for reading study material, note taking, and reference skills. A series of programmed lessons on the recognition of the main idea of a paragraph was introduced to and completed by the students. In this series of exercises both pre and post tests were administered to the students to determine the effectiveness of the programmed materials. A final series of directed reading exercises was developed from the students' assignments in the content areas of political science, mathematics and English. At the conclusion of these lessons, pertinent questions were asked to determine the effectiveness of the lessons.

By the end of the third week of the course, after a variety of materials had been introduced and the essential processes had been discussed in detail, the independent learning activities became student directed. The students were instructed to come to class with a schedule of reading and study activities planned for the second hour of class. This procedure was used to provide the students with an opportunity to practice organizing a time schedule.

The responsibility of extending reading interest and tastes was that of the entire summer school staff. In view of this, the students were invited to attend and did attend movies, theatre productions, and light opera productions. These activities were followed by the reading of textual materials and class discussions related to the theatrical productions. Two memorable productions and related follow-up activities were "Tartuffe" and the "West Side Story." In addition, the students were provided with a wide variety of paperback books and anthologies. A number of the students enjoyed the Scholastic Literature anthologies: "Courage," "Mirrors," "Personal Code," and the "Lighter Side." A daily activity in the reading class designed for extending tastes and interests was the reading of brief excerpts from anthologies, magazines, and other periodicals. In addition, a number of popular periodicals were made available to the students in the classroom.

Reading Materials Used

A variety of the materials was needed to meet the wide range of reading abilities in the class. The students' median percentile scores in the Iowa Silent Reading Test ranged from a low of 32 to a high of 72 on appropriate norms. The approximate grade level range of the students' reading abilities was from the low eighth grade level to the low eleventh grade level. Both teacher-made and commercial materials were used. Some of these materials were

A. Commercial
    S.R.A. Reading for Understanding, Laboratory
    E.D.L. Skimming and Scanning Text and Workbook
    Study Type of Reading Exercises by R. Strang
    Coronet Reading Films by T. Harris
    Tactic II Laboratory by O. Niles
    Selected Lessons from the E.D.L. Listen and Read Program
    S.R.A. Better Reading Books
    Selected Coronet Learning Programs
    The McCall Crabbs—Standard Test Lessons
B. Teacher Made
    Vocabulary Review Exercise
    Phrase Comprehension Exercises

Sentence Comprehension Exercises
Paragraph Comprehension Exercises
Programmed Main Idea Exercises

Reading Course Evaluation

To determine the effectiveness of the reading course, both formal and informal methods of evaluation were used. The Davis Reading Test Forms 1A and 1B were administered as pre and post test measurements. The three sub-test scores (Level, Speed, and Total) listed in the manual were analyzed for significant differences through the use of the simple t-test. On the level of comprehension subtest scores there was a difference in favor of the post-test scores but it was not significant. In the speed of reading subtest scores there was a difference in favor of the post-test score and it was significant at the .05 level of confidence. On the total test scores there was a difference in favor of the post-test scores, but it was not significant.

Informal evaluation of the students' progress was determined through various techniques. The students kept graphic records of their progress on comprehension practice exercises. For each lesson that was completed a rate comprehension score was computed and recorded. The method of computation was the percentage of correct responses to comprehension questions multiplied by the rate in words per minute. For example, a student who had 9 out of 10 correct responses on comprehension questions and who had read at a rate of 450 words per minute recorded a reading efficiency score of (.90 x 450 or) 405 words per minute. Comparisons were made between the mean initial and final scores for the group. As a class the students improved their reading efficiency score by 66 percent. The greatest individual improvement was 290 percent, while the lowest individual improvement was 0 percent or no improvement. In a comparison through the simple t-test between initial and final mean scores, there was a significant difference at the .01 level of confidence in favor of the final mean scores.

A second informal method of evaluation was the charting of the average scores for each ten Standard Test Lessons completed. The scores were recorded as grade scores per minute and were relative scores with an increase indicating an improvement and a decrease indicating a failure to improve. As a class, the students improved .4 grades per minute over the six-week period. A comparison through the use of the simple t-test between mean scores on the first ten lessons and last ten lessons completed showed that there was a significant difference in favor of the final mean scores at only the .10 level of confidence.

A third informal method of evaluation was the administration of biweekly review tests based on the contents of the Funk and Lewis text "30 Days to a More Powerful Vocabulary." On each biweekly test there were twenty-one items. The mean score for the class decreased on each biweekly test. For the first week the class mean score was seventeen (17). For the second week the class mean score was fifteen (15) and for the third week the class mean score decreased to twelve (12). The decreasing scores seem to reflect the students' inability to keep apace with the very rigorous and strenuous activities of the overall program rather than an inability to learn vocabulary.

A fourth method used to evaluate student progress informally was the administration of pre- and post-tests to determine the effect of a series of programmed lessons designed to improve the students' ability to recognize the main idea of a paragraph. The programmed materials were organized so that the students were to identify the "main idea" of a paragraph from a series of four possible responses, i.e., "main idea," "too general," "too specific" and "irrelevant." This was taught as one of the skills related to independent study activities.

A comparison between the pre- and post-test scores through the use of the simple t-test showed that the students made higher scores on the post-tests. The difference in favor of the post-test was significant at the .05 level of confidence.

Listed below is a summary table of the results of both the formal and informal evaluations of the reading course:

Summary Table of T-Test and Other Results of Formal and Informal Evaluations.

I. Formal Test Results	
A. Davis Reading Test	T-Test
1. Level	.35
2. Speed	1.30*
3. Total	.32
II. Informal Test Results	
A. Reading Efficiency Score	5.04**
B. Standard Test Lessons	1.67***
C. Mean Vocabulary Test Scores	
1. First Biweekly Test	17
2. Second Biweekly Test	15
3. Third Biweekly Test	12
D. Main Idea Tests	1.77*

* Significant at the .05 level of confidence
** Significant at the .01 level of confidence
*** Significant at the .10 level of confidence

The above listed results should be interpreted with caution. Research indicates that there is usually a regression toward the mean in most gains made in short term reading courses.

Informal evaluations of the effectiveness of the lessons and discussions concerned with organizing a schedule were made through in-class observations of students' actual behavior in organizing a schedule of independent learning activities. From the observations made in class, it would appear that this phase of the program was least effective. The students seemed unable to organize a schedule on their own time outside of the classroom. However, after a brief review of the importance of organizing a schedule and a review of the materials, the students were able to organize a schedule of independent learning activities in class. Possibly, the students found that it was easier to organize in class with the materials on hand rather than devoting time to it outside the classroom.

Conclusions and Recommendations

The effect of the reading course and the total summer program, as determined by both informal and formal evaluation, seemed to be highly positive. The objectives of the instructional program were met. There was improvement in both general and selected reading skills. The students' reading interest and tastes seemed to have been extended, so far as could be determined, by their highly positive reaction to the stimulating materials and activities of the entire program. However, with some modification in scheduling and curriculum reorganization, the reading course and the total program could have been more effective.

In view of the stated purpose of the total program, which was to assist culturally disadvantaged students to acquire academic skills needed for successful college work, certain aspects of the program including the reading course were destined for limited success. It is known from the research on the culturally disadvantaged that by the junior and senior high school years the students are anywhere from two to five years behind their middle class counterparts in academic skills. In this program, some assistance was given to the students. However, this should not be interpreted to mean that the assistance given was enough to insure the students' success in college.

As a result of this teaching experience, the author recommends that any program of this nature, if it is to be more effective, should begin earlier in the student's academic career, possibly as early as the junior high school years, and continue for four or five years.

Also, in view of the stated purposes of the program, more attention should be given to the academic load organized in a program of this nature. The students were required to take the equivalent of nine credits of academic work plus required work in counselling and reading and required attendance at social and cultural activities. At times the students in the program seemed overwhelmed with the amount of work.

In view of the practice of many universities limiting the number of course credit hours even competent graduate students are permitted to take during the summer, it seems reasonable to recommend that the academic load be reduced to a maximum of two formal courses. It seems preferable to reduce the academic load rather than the other social and cultural activities which the students found to be both entertaining and meaningful.

In dealing with the academic course content, it appeared that the lack of structure and direction (other than that provided by the textbook itself) limited the students' ability to perform academically.

In this vein, the author recommends: that suitable texts be selected for the students; that course outlines with some built-in structure be provided, i.e., course outlines with study questions; and that realistic assignments commensurate with the students' abilities be given.

In more mundane and practical matters related to both the reading course and content courses the author recommends

> that students not be scheduled to attend reading classes or any classes for that matter, in the evening after a full day of both academic and physical activities;
> that closer cooperation between the reading instructor and content teacher take place so that more meaningful assignments would be made by both;
> and that additional time be given to corrective work with selected students in any program of this nature.

The Reading Improvement Programs of Florida Institutions of Higher Learning: 1966-67

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INTRODUCTION

Since 1929, there have been over fifty surveys made regarding the content and extent of reading improvement programs (RIPs) in the United States. (2) This study consisted of a mailed survey which attempted to determine the extent and content of the RIPs existing in Florida in the fall of 1966. The study was patterned after those of Lowe (1), and Thurston, Lowe, and Hayden. (3)

As of September, 1966, there were fifty-three institutions of higher learning in Florida. These schools included universities, colleges, junior colleges, community colleges, branches of colleges, and special schools such as engineering, service and law schools not adjacent to parent schools. Forty-seven or 89 per cent of the schools replied to the survey while six or 11 per cent did not. Of the forty-seven replying, thirty-seven or 79 per cent had a RIP while ten or 21 per cent did not. The findings of the study were based on thirty-six usable questionnaires.

Schools Not Offering RIPs

Of the ten schools not offering a RIP to their students, three asked a total of ten questions concerning the implementation of a RIP. The questions were:

1. Whom should the program serve? (1)
2. Should credit be given? (1)
3. Who should pay the program? (1)
4. How long should the program last? (1)
5. What screening methods should be used? (2)
6. How should progress be measured? (1)
7. What types of approaches could be used? (1)
8. How could a RIP be integrated into an extant composition course? (1)
9. How should materials be organized? (1)

Seven of the ten schools stated that they desired having a RIP but seven schools were not planning to commence a RIP in the near future. Two schools had offered programs at one time. The reasons for discontinuance of the program were "It was a commercial service from the outside, and I feel it to be both expensive and of small accomplishment." "Teacher who qualified left and no replacement was found."

Schools Offering RIPs

Of the thifty-six schools offering a RIP, fourteen asked twenty-three questions concerning the starting and improving of a RIP. The questions were:

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*With the assistance of Nancy Bransford and Gloria Will.

1. How should program be organized? (2)
2. What should be taught? (1)
3. What tests should be used? (1)
4. What results do other teachers get? (1)
5. What motivation techniques are useful? (1)
6. How are listening skills developed? (1)
7. What is the relation of speech to reading? (1)
8. How many materials are needed? (1)
9. How may rapid reading, typing and dictation equipment be used to facilitate study and library assignment? (1)
10. Should the course be credit or non-credit? (1)
11. What students should be enrolled in a developmental reading course? (1)
12. What instruments are desirable? (1)
13. How can large numbers of students be handled on an individual basis? (2)
14. What are some screening techniques? (1)
15. How does one set up homogeneous groups? (1)
16. What is the difference between "Directed Studies Courses" and "English Techniques of Reading Courses?" (2)
17. To what extent should outside work (homework) be assigned in a non-credit course? (1)
18. Discuss grading and evaluation of students (1)
19. What about visual screening and local eye specialists? (1)
20. Is there Federal aid for community reading centers? (1)

Year RIP was Started

Year	Number of Schools
1966	6
1965	6
1964	2
1963	2
1962	1
1961	5
1960	4
1958	4
1957	1
1954	1
1952	1
1950	1
No Answer	3

Department or Division Controlling or Sponsoring RIP

Department	Number of Programs
English (Humanities)	13
Guidance	5
Education	5
Guided/Directed Studies	4
Reading	3
Communications	3
Dean	2
No Answer	2

There were sixteen schools offering a RIP to persons other than their students. The other groups mentioned were adults, secondary students, and elementary school children.

Academic credit was given by sixteen schools. The departments awarding credit are listed below:

Department	Number of Programs
English	6
Guided and Directed Studies	4
Communications	3

Reading	2
Education	1

There were fifteen programs for which a fee was charged. The costs are given below:

Cost	**Number of Programs**
No Answer	17
Regular semester hour fee	6
No fee	5
$45.00	2
$41.00	1
$30.00	1
$21.00	1
$10.00	3
$ 3.00	1

Because the question regarding the fees was not stated clearly, some additional, unsolicited information was given by some respondents regarding the cost of the reading program in terms of teacher's salaries, materials, etc. Specific amounts mentioned were as follows:

$150,000.00
$ 30,000.00
$ 12,370.00
$ 6,500.00
$ 4,000.00

The next three questions dealt with the length of class sessions, number of class meetings a week, and the duration of the program. The data reported are for thirty-five schools and are given below:

Class Length	**Meetings Per Week**	**Duration of Program**	**Number of Schools**
1 hour	3	Sem/Tri/Qt	18
1 hour	1	Sem/Tri/Qt	2
1 hour	2	Sem/Tri/Qt	4
1½ hours	2	Sem/Tri/Qt	1
2 hours	2	Sem/Tri/Qt	2
1 hour	5	Sem/Tri/Qt	1
1 hour	3	9 weeks	1
1 hour	2 or 3	7-11 weeks	1
2 hours	1	10 weeks	1
1 hour	5 every two weeks	16 weeks	1
1 hour	3	No set length	3
1 hour	4	No set length	1
No response	–	———	1

The number of full and part-time instructors was as follows:

Full Time	**Part Time**	**Number of Programs**
18	9	1
6	0	1
3	2	1
3	1	1
2	4	1
2	1	1
2	0	4
1	6	1
1	2	1
1	1	5
1	0	10

0	2	2
0	1	7
No response	—	1
Tot. 59	41	

When asked how many students were involved in the various RIPs, the numbers given were as follows for Fall, 1966:

Number of Students (approx.)	Number of Schools
2,228	1
700-800 (750)	1
640	1
500	1
320	1
300	1
250	2
200-250 (225)	1
228	1
224	1
206	1
200	3
180	1
150 (+)	1
125	2
120	1
119	1
115	1
95	1
77	1
72	1
70	1
60-72 (66)	1
60	1
51	1
50	1
45	1
41	1
30	1
25	1
20	1
Total 8,358 Students (No response received from two schools)	Total 8,357 Students

The next question asked what materials were used in the programs and for specific brand names where possible. The general results were as given below for thirty-six schools:

Material Used	Different Types	Number of Programs
Pacers	5	28
Tachistoscopes	11	29
Reading Films	8	33
Workbooks	26	32
Reading Tests	11	34
Other Tests	28	26
Other Materials	37	29

The listings which follow name the specific materials used and the number of programs using them:

Pacer	**Number of Programs**
SRA Accelerators	12
EDL Skimmer	9
AVR Rateometer	7
LIC Shadowscope	5
Accelerators	2
Tachistoscopes	**Number of Programs**
EDL Tach X	10
EDL Flash X	6
PDL Perceptoscope	3
AVR Eye Span	2
Keystone Flashmetor	1
Speed 'O Scope	1
"A Card"	1
Lafayette Tachistoscope (Psychotechnics)	2
No brand name given	2
Reading Films	**Number of Programs**
Educational Developmental Laboratories	28
Craig Reader	5
Perceptoscope	4
Harvard	2
Iowa	2
Program for Achievement in Reading	2
Purdue	2
Percepmatic	1
Reading Tests	**Number of Programs**
Triggs: Diagnostic Reading Tests	17
Brown: Nelson-Denny Reading Test	10
California Reading Test	4
Davis Reading Test	3
Gates Reading Survey	3
Iowa Silent Reading Tests	3
California Achievement Test	1
Co-op English Test	1
Craig	1
McDonald: Reading Versatility Test	1
Other Types of Tests	**Number of Programs**
California Study Methods Survey	3
Keystone Visual Survey	3
School and College Achievement Tests (SCAT)	3
Kuder Preference Record	2
Teacher Made Tests	2
Stanford-Binet	2
Sequential Tests of Educational Programs (STEP)	2
Wechsler Adult Intelligence Scale (WAIS)	2

The following tests were used in one program only: Audiometer, California Phonics Survey, College Quotient Test, Craig, Otis Beta, Otis Gamma, Orthorater, Purdue English, Strong Vocational, Tyler Study, Watson-Glazer, and tests to be used with films, etc.

The workbooks and other materials used in the programs were quite varied. The list which follows gives the names and/or titles of the materials and the number of programs using them:

Workbooks/Materials	**Number of Programs**
SRA Reading Labs	19
SRA Reading for Understanding	7
Reader's Digest Skill Builders	7
EDL Labs	6
Art of Efficient Reading (Spache and Berg)	5

Learning to Learn (E. P. Smith)	5
Toward Reading Comprehension (Sherbourne)	5
Texts used in regular classes	4
Periodicals and Magazines	4
Breaking the Speed Barrier (Gilbert)	4
Be a Better Reader (N. B. Smith)	4
Better Reading Books (Simpson)	4
Test Lessons in Reading (McCall-Crabbs)	4
Read with Speed and Precision (Leedy)	3
Efficient Reading (Brown)	3
Power and Speed in Reading (Gilbert)	2
How to Study (SRA)	2
English 3200	2
Efficient Study (F. W. Robinson)	2
How to Become a Better Reader (Witty)	2
How to Improve Your Reading (Witty)	2
Reading Comprehension Exercises (Triggs)	2

Numerous other materials were mentioned once with the total being thirty-eight, and the overall total being sixty.

Many of the respondents gave additional information about their RIPs. Of note was the comment of many instructors as to the "individualized" nature of their RIP. Thirty-six schools having RIPs returned usable questionnaires.

Summary Discussion of Findings

The fact that at least seventy per cent of the institutions of higher learning of the State of Florida reported having some type of RIP would seem to imply that college students ask for and/or need help in reading college materials. This finding would seem to show an interest in student welfare on the part of administrative and teaching personnel. Of the ten schools not currently offering a RIP, seven desired one. This finding was encouraging. Another positive note was the finding that all schools having a RIP controlled it themselves. The questions asked by RIP and NO-RIP schools were intelligent and timely. Almost half the RIP schools started their RIPs in 1962 or later, and conversely the other half had RIPs started during 1950 to 1961. English and Guidance departments controlled about one-half the RIPs with Reading and Education only directing eight RIPs. Nearly one-half of the RIPs gave academic credit with English departments leading. The listing of the cost to the student for RIPs showed reasonable fees being charged. The predominant type of RIP met three times a week for a term's duration or twice a week for one and one-half hours for a term. Many other plans were given. There were fifty-nine full-time and forty-one part-time instructors involved in the thirty-six RIPs for which data were available. There were approximately 8,357 students in the Fall, 1966 RIPs of thirty-five schools. Most of the RIPs used some type of mechanical aids and these machines were used with some type of grouping arrangement. Many RIPs used pacers, and controlled readers were used individually also. Controlled readers, reading films, and tachistoscopes were used in almost all the RIPs. Workbooks and other materials were used by most RIPs with sixty different items being mentioned. The "lab" or "boxed" materials seemed to be most popular.

There were many different reading and other tests used by the respondents. An interesting finding was that seventeen RIPs were using a reading test which some research has shown to contain non-comparable forms. This test has been studied by numerous researchers, some of whom have made the same finding; i.e., the test could not be validly and reliably used to evaluate progress in a RIP. Leslie F. Coates of St. Petersburg Junior College has made a study of this test and has also reviewed the research on it. The results of that study were presented at this conference.

As in the past, the respondents to the survey cooperated in a manner befitting professionals. Much credit is due them for taking the time to complete the questionnaires. The writer is grateful to them. A national survey will be conducted soon and it is hoped that the nation-wide responses will equal those of the Floridians in percentage of returns.

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Some Relationships Between Values and Reading Gains in College Programs

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Background of the Problem

This study stemmed from a theoretical issue raised by Holmes (4 :285) as to the role of values in subject-matter achievement. Values were subsumed by Holmes under the hypothetical construct of mobilizers which were defined as:

> a deep seated value system the presence of which facilitates the function and organization of those substrata skills underlying a higher more complex ability by compounding them into a unified pattern and making them ready for active service. . . .
> They (mobilizers) must play major roles as fundamental value-systems from whence spring the many and specific attitudes a person holds toward the purpose and worth of life, duty, criticisms, customs, adversities, society, intellect, and the self.

Holmes (4 :284) further postulated that it may be more appropriate to speak of subject-matter area personality such as a "reading personality trait," instead of a maladjusted or adjusted personality, per se.

A rather complete review of reading theory and personality theory is presented by Athey and Holmes (2).

It is the purpose of this study to explore some relationships, if any, between values, reading rate and comprehension gains made in developmental reading programs for college students.

Procedures

Twelve college reading improvement sections totaling 228 Ss participated in the study. Typically, these students met for eight weeks on a voluntary basis for a total of sixteen hours of instruction. The average educational level was first-year college. The students were administered the Rate and Comprehension sections of the Nelson-Denny Reading Test (7), Form A and the Allport-Vernon-Lindzey Study of Values (1), Third Edition, as part of pre-testing. The Nelson-Denny Reading Test, Form B was given as part of the post-testing. The reliabilities for the reading and value scales are given in Table 1.

TABLE 1

Reliabilities for Reading and Value Scales

Measure	Reliability	N
Rate	.93	74*
Comprehension	.81	110*
Theoretical	.85	53**
Economic	.84	53**

Aesthetic	.87	53**
Social	.81	53**
Political	.88	53**
Religion	.93	53**

* Equivalent forms administered one week apart. Reliabilities obtained from Nelson-Denny Reading Test Manual (7).

** Test and retest given two months apart. Reliabilities obtained from Allport-Vernon-Lindzey Manual (1).

It is apparent from these reliabilities that they are well above the minimal standard of a reliability coefficient of .50 set by Kelley (6) for group testing. Two scales approach the reliability criterion of .94 for individual diagnosis also determined by Kelley (6). The mean reliability coefficient obtained by z transformation for the Allport-Vernon-Lindzey value scales for a two-month interval was .88.

Validity for the Nelson-Denny Rate test is mainly based on "face validity" although its concurrent validity with the Cooperative English is .618. Validity for the Nelson-Denny Comprehension (7 :26) is reported in terms of average difficulty and per cent passing the questions for criterion groups such as the upper and lower 27 per cent of the subjects taking the test.

The Allport-Vernon-Lindzey scales is essentially based on philosophical formulations by Spranger (10) on a somewhat exalted view of man's values about life. Succinct characterizations of the six basic types abstracted from Allport-Vernon-Lindzey (1) are as follows:

1. *The Theoretical.* The dominant interest of the theoretical man is the the discovery of truth.
2. *The Economic.* The economic man is characteristically interested in what is useful.
3. *The Aesthetic.* The aesthetic man sees his highest value in form and harmony.
4. *The Social.* The highest value for this type of man is love of people.
5. *The Political.* The political man is interested primarily in power.
6. *The Religious.* The highest value of the religious man may be called unity. He is mystical and seeks to comprehend the cosmos as a whole, to relate himself to its embracing totality.

Aspects of construct validity of the A-V-L scales are well documented in Buros (3), Hundleby (5), and Radcliffe (8).

Findings

Table 2 summarizes the pre and post-test reading rate and comprehension scores for the three groups which form the study.

TABLE 2

Pre and Post-test Reading Scores for Total College Sample, College Men and College Women

	Total Sample N=228		College Men		College Women N=64	
Reading Scores[1]	Mean	S.D.	Mean	S.D.	Mean	S.D.
Pre-test Rate	276.31[2]	78.08	274.32	83.57	281.42	62.17
Post-test Rate	448.91	110.84	451.02	111.10	443.52	110.86
Pre-test Comprehension	43.12[3]	10.66	41.92	10.71	46.22	9.95
Post-test Comprehension	47.20	10.92	46.67	10.72	48.55	11.40

[1] Pre-test scores obtained on Nelson-Denny, Form A. Post-test scores obtained on Nelson-Denny, Form B.

[2] In words per minute.

[3] Raw score.

The mean initial thirteenth-grade percentile equivalents for the total college sample is the 62nd percentile and for comprehension it is the 63rd percentile.

The initial mean 4 point difference in comprehension scores between the college men and women is equivalent to 10 percentiles or from the 53rd percentile to the 63rd percentile.

The other pre and post-test mean differences between the groups are minimal.

Essentially the college group in this study is slightly above average for college freshmen, according to the Nelson-Denny (7) norms for Grade 13.

Table 3 presents the intercorrelations between Rate Gains, Comprehension Gains, and Values for the total sample of 228 students. The means and standard deviations are given below the matrix.

TABLE 3

Intercorrelations Between Rate Gains, Comprehension Gains and Values, Total Sample

N=228

Reading Tests	Theo.	Econ.	Aesth.	Social	Polit.	Religious
Rate B-A[1]	.173[3]	.012	–.140[3]	.022	.034	.027
Comp. B-A[2]	.051	–.090	.047	–.049	–0.80	.077
Mean[4]	41.99	40.86	37.90	38.12	43.27	37.27
S.D.	6.90	8.12	9.01	7.38	6.89	8.79

[1] Rate gains based on subtracting pre-test score (A) from post-test score (B).

[2] Comprehension gains based on subtracting pre-test score (A) from post-test score (B).

[3] A correlation of .138 is significant at the 5 per cent level of confidence for an N of 200.

[4] Reported in percentiles.

For the total sample only two correlations between Rate Gain scores and Theoretical and Aesthetic values were statistically significant at the 5 per cent level of confidence.

Since separate norms are reported by Allport-Vernon-Lindzey for college men and women, the total sample of 228 was further analyzed on the basis of sex differences.

Table 4 and 5 present intercorrelations, means and standard deviations for 164 college men and 64 college women, respectively.

For college men, Table 4 reveals the following two statistically significant correlations:

1. Rate Gains and Theoretical, positively correlated (.141) at the 5 per cent level of significance.
2. Rate Gains and Aesthetic, negatively correlated (–.202), at the 1 per cent level of significance.

For college women, Table 5 shows the following three statistically significant correlations all found at the 1 per cent level of significance.

1. Rate Gains and Theoretical, positively correlated (.226).
2. Comprehension Gains and Economic, negatively correlated (-.239).
3. Comprehension Gains and Political, negatively correlated (-.304).

The only value scale significant for both college men and women is the correlation between Rate Gain and Theoretical.

Of further interest is the question of whether there are any significant differences between the means of the value scales for college men and women.

Table 6 presents a comparison of the mean value percentiles for both sexes.

It is apparent from Table 6 that in this study 4 out of the 6 values are significantly different for both sexes at the .001 level of confidence. These include Theoretical, Economic, Aesthetic, and Social. The two value scales that don't distinguish between the college men and college women in this sample are Political and Religious. These findings are generally consistent with the previous correlational data except for Comprehension Gain which is significantly related to Political for the college women. Closer examination of the comprehension scores of the college men and college women reveals that the women had a greater range of comprehension scores than their men counterparts.

The overall impact of Table 6 is that separate norms for the sexes should be characteristically reported at least when it comes to values and possible reading scores!

Discussion

Although there are at least 280 references listed as using the Allport-Vernon-Lindzey value scales in Buros (3), the writer could only find one that had any reasonable relationship to this study.

Rothney (9) attempted to relate the A-V-L values scales to 300 eleventh-grade boys on academic success. He determined academic success by teachers' marks. From a matrix of 36 coefficients relating teachers' marks to Value scales he found a median correlation of -.01! Inspection of all 36 correlation coefficients ranged from a maximum of .24 to a minimum of -.13.

The median correlation between values and reading for the three matrices in this study was .118. The coefficients ranged from a maximum of .226 to -.304!

Perhaps an attempt to indicate some similarities and differences between Rothney's (9) study and the present one might lead to some insights into both studies as well as the entire area of values and subject-matter achievement.

Similarity between two studies was mainly in the correlational attempt to relate values and subject-matter achievement.

Differences, however, between the two studies highlighted changes that have occurred in the behavioral sciences as to the role of theory, tests and measurements, and efforts at understanding individual differences.

This study was initiated in order to extend theory. The results are to be cautiously interpreted as supportive but only very tentative. Although a restricted range of talent took part in the study, individual differences, especially with regard to sex differences in values were manifest.

Further work needs to be done with criterion groups such as fast women versus slow women readers as well as cross-validation studies to see how items hold up.

Could there also be shifts in values within sex and between sexes?

Might not new subject-matter-oriented value scales be developed to test the specificity of the mobilization of effort to understand or not understand what is communicated?

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TABLE 4

Intercorrelations Between Rate Gains, Comprehension Gains and Values, College Men

N=164

Reading Tests	Theo.	Econ.	Aesth.	Social	Polit.	Religious
Rate B-A	.141[1]	–.043	–.202[2]	.073	.041	.043
Comp B-A	–.027	–.104	.088	–.070	–.009	.071
Mean	43.19	42.45	35.81	37.03	43.55	37.29
S. D.	6.51	8.05	8.32	7.48	7.05	9.07

[1] A correlation of .138 is significant at the 5 per cent level of cnfidence for an N of 200.

[2] A correlation of .181 is significant at the 1 per cent level of confidence for an N of 200.

TABLE 5

Intercorrelations Between Rate Gains, Comprehension Gains and Values, College Women

N=64

Reading Tests	Theo.	Econ.	Aesth.	Social	Polit.	Religious
Rate B-A	.226[1]	.013	.048	-.084	.002	-.020
Comp. B-A	.118	-.239[1]	.136	.115	-.304[1]	.095
Mean	38.91	36.79	43.23	40.87	42.54	37.22
S. D.	6.99	6.83	8.65	6.38	6.48	8.10

[1] A correlation of .181 is significant at the 1 per cent level for an N of 200.

TABLE 6

Comparisons of Mean Value Scale Percentiles for College Men (N=164) and College Women (N=64)

Values	College Men Mean	College Men S.D.	College Women Mean	College Women S.D.	Signif.
Theoretical	43.19	6.51	38.91	6.99	.001
Economic	42.45	8.05	36.79	6.83	.001
Aesthetic	35.81	8.32	43.23	8.65	.001
Social	37.03	7.48	40.87	6.38	.001
Political	43.55	7.05	42.54	6.48	---
Religious	37.29	9.07	37.22	8.10	---

Attitude of High School Content Area Teachers Toward the Teaching of Reading

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The teaching of reading skills in the secondary schools is an educational trend that is receiving increasing emphasis. There seems to be an ever greater demand for trained teachers to develop and teach such programs. Several approaches have been made by secondary schools to initiate programs. The most common approach used is to make the teaching of reading skills an integral part of the English curriculum. Although this appears to be the most common pattern, the most desirable organization would be to have all the subject matter teachers teaching the skills pertinent to their own teaching area.

The major problem in developing a reading program in the secondary school is to enlist the aid of the content area teachers. Even when the teachers are willing to admit the needs for such a program, they are sometimes hesitant to learn anything about the techniques needed to improve the skills. Many of them feel that they just don't have the time to teach both the content and the necessary reading skills. It is possible that some teachers feel they are doing an adequate job of teaching the needed reading skills and therefore see no need for change.

In a study done by Olson and Rosen (1967-68) with the same population of teachers and their principals as discussed in this paper, the following was found:

1. Female teachers feel they almost always used textbook materials suited to the reading levels of the students. Male teachers feel they did a good job of this but were less positive that they almost always used appropriate materials. The principals felt that the teachers did a much less effective job in suiting the reading material to the reading levels of the students than the teachers indicated they were doing.
2. Over half of the female teachers felt they taught the reading skills needed for their content area adequately almost always while the male teachers indicated that they taught them adequately less frequently. The principals felt that the teachers did not do as adequate a job as they said they were doing.

Perhaps of more interest than the differences between the responses of the teachers and the teachers and principals were the contradictions between responses.

Procedure. The author, in order to evaluate the extent to which teachers felt they were teaching some aspects of reading skill development collected the responses of junior and senior high school teachers

(N=585) to a checklist involving their practices relating to reading. In the teacher's responses there were seven content areas represented: English (N=146), Social Studies (N=123), Science (N=102), Mathematics (N=108), Business (N=33), Vocational (N=49) and Foreign Language (N=24).

The teachers were given a list of twenty practices relating to reading in the content areas (see Appendix A) and asked to put a check in the column which best described their own classroom practice. They were to check Column One if they almost always carried on the practice, Column Two if they carried it on most of the time, Column Three if they carried it on sometimes and Column Four if they seldom or never prescribed to the practice.

Analysis of the Data. Tables 1-5 show five of the items on the twenty-item survey that are most pertinent to this report. The five items shown were significant at the .01 level. The complete data for each of the twenty items may be obtained from the author.

TABLE 1
Percent of Teacher Response to Item #1*

	Almost Always	Most of the time	Sometimes	Seldom or Never
English	89.7	10.3	—	—
Social Studies	84.6	15.4	—	—
Science	82.4	14.7	2.9	—
Mathematics	89.8	9.3	.9	—
Business	90.9	9.1	—	—
Vocational	81.6	18.4	—	—
Foreign Lang.	62.5	20.8	—	16.9

*Item #1. Text materials are suited in difficulty to the reading levels of students. (X^2=111.51)

TABLE 2
Percent of Teacher Response to Item #7*

	Almost Always	Most of the time	Sometimes	Seldom or Never
English	39.7	39.7	15.8	4.8
Social Studies	18.7	32.5	38.2	10.6
Science	22.5	31.4	25.5	20.6
Mathematics	25.2	37.4	25.2	12.1
Business	33.3	27.3	24.2	15.2
Vocational	16.3	26.5	36.7	20.4
Foreign Lang.	54.2	29.2	—	16.7

*Item #7. The teacher knows the special reading skills in the subject. (X^2=61.86)

TABLE 3

Percent of Teacher Response to Item #17*

	Almost Always	Most of the time	Sometimes	Seldom or Never
English	16.4	26.7	39.0	17.8
Social Studies	11.4	20.3	42.3	26.0
Science	13.7	15.7	42.2	28.4
Mathematics	2.8	15.0	44.9	37.4
Business	6.1	15.2	30.3	48.5
Vocational	4.1	32.7	32.7	30.6
Foreign Lang.	4.2	20.8	20.8	54.2

*Item #17. Readings from various textbooks are provided for those who cannot read the regular text. ($X^2=48.40$)

TABLE 4

Percent of Teacher Response to Item #18*

	Almost Always	Most of the time	Sometimes	Seldom or Never
English	56.8	30.8	12.3	—
Social Studies	45.5	39.8	14.6	—
Science	43.1	33.3	18.6	4.9
Mathematics	37.4	49.5	10.3	2.8
Business	30.3	33.3	18.2	18.2
Vocational	30.6	51.0	14.3	4.1
Foreign Lang.	54.2	37.5	8.3	—

*Item #18. Students are grouped within the classroom for differentiated instruction. ($X^2=61.68$)

TABLE 5

Percent of Teacher Response to Item #19*

	Almost Always	Most of the time	Sometimes	Seldom or Never
English	69.9	26.7	.7	2.7
Social Studies	53.7	36.6	8.9	.8
Science	55.9	31.4	6.9	5.9
Mathematics	48.6	43.9	5.6	1.9
Business	54.5	15.2	15.2	15.2
Vocational	51.0	32.7	10.2	6.1
Foreign Lang.	58.3	25.0	12.5	4.2

*Item #19. The teacher knows the reading level of the textbook (s) being used. ($X^2=48.69$)

Table 1 shows that all but one (foreign language) group of teachers felt that they almost always suited the reading difficulty to the reading level of the students. The response of the foreign language teachers is not surprising since they are working with a select group of students. Except for the language teachers the vocational teachers indicated that they provided material to a lesser degree than other teachers.

Table 2 shows that 57.1 percent of the vocational teachers felt that they knew the reading skills needed for their subject sometimes or seldom/never. The social studies teachers, 48.8 percent, responded in the same way. All of the content area teachers showed a wide variation in their responses.

Table 3 shows that the majority of the teachers only sometimes or seldom/never provided other reading materials for those who could not read the regular textbook assigned to the course.

Table 4 shows that the majority of the teachers felt that they did an adequate job of grouping for differentiated instruction. The foreign language teachers indicated that they grouped almost always or most of the time (91.7 percent). The English and social studies teachers respond in the same way, 87.6 percent and 85.3 percent respectively.

Table 5 shows that the vast majority of the content area teachers felt that they knew the reading level of the textbook(s) they were using almost always. The business training teachers had more variation than any other group.

Other items that showed a significant difference (.01 level) in the responses of the seven groups of teachers were: 2, 4, 5, 6, 8, 11, 12, and 15.

Conclusions and Discussion. The results of this study seem to indicate that the teachers generally feel that text materials are suited in difficulty to the reading level of the students, group for differentiated instruction, know the reading levels of the textbooks they use, and know the special reading skills of their content area. They indicated that they generally did not provide other reading materials for those who could not read the textbook. In most of the items evaluated, however, there was an indication of wide variation in responses for teachers within the same content area and between content areas.

Further evaluation of all the twenty items indicates a number of inconsistencies in the responses of the teachers. An example of one inconsistency can be found by comparing the responses on Items One and Seventeen. It appears that the teachers are saying that the reading materials are almost always suited to the reading level of the students but for those who cannot read these materials little or no provision is made. If we couple this with the information from Item Nineteen it appears that the teachers are not as sure about the reading level of the materials they use. The question could be asked. Is it possible to say that we always provide text material suited in difficulty to the reading levels of students and at the same time say we don't provide other textbooks for those who cannot read the regular text? It is of interest to note that when the teachers were asked how they knew the reading level of the text, most of them responded that they got this information from the grade level for which the publisher said the text was appropriate.

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APPENDIX A

PRACTICES RELATED TO READING IN THE CONTENT AREAS

Teacher's Name: Subject Taught:

The twenty practices listed below often are recommended in teaching effectively the special reading skills in the various content areas. Indicate the extent to which this practice applies to your classes. Draw a line around the number that indicates the appropriate response from among the following four:

1 — Almost Always
2 — Most of the time
3 — Sometimes
4 — Seldom or never

1. Text material used is suited in difficulty to the reading levels of students.	1	2	3	4
2. Students are encouraged through assignments to read widely in related materials.	1	2	3	4
3. At the beginning of the year, adequate time is taken to introduce the text and to discuss how it may be read effectively.	1	2	3	4
4. The teacher is aware of the special vocabulary and concepts introduced in the various units.	1	2	3	4
5. Adequate attention is given to vocabulary and concept development.	1	2	3	4
6. Provisions are made for checking on extent to which important vocabulary and concepts are learned, and reteaching is done where needed.	1	2	3	4
7. The teacher knows the special reading skills involved in the subject.	1	2	3	4
8. The teacher teaches adequately the special reading skills in the subject.	1	2	3	4
9. The course content is broader in scope than a single textbook.	1	2	3	4
10. Assignments are made clearly and concisely.	1	2	3	4
11. Students are taught to use appropriate reference materials.	1	2	3	4
12. Adequate reference materials are available.	1	2	3	4
13. Plenty of related informational books and other materials are available for students who read *below-grade* level.	1	2	3	4
14. Plenty of related informational books and other materials are available for students who read *above-grade* level.	1	2	3	4
15. The teacher takes advantage of opportunities that may arise to encourage students to read recreational as well as informational reading matter.	1	2	3	4
16. The teacher helps the poor reader to develop adequate reading skills.	1	2	3	4
17. Readings from various textbooks are provided for those who cannot read the regular text.	1	2	3	4
18. Students are grouped within the classroom for differentiated instruction.	1	2	3	4
19. The teacher knows the reading level of the textbook(s) being used.	1	2	3	4
20. The teacher knows the reading ability of the students from standardized tests, other evaluative materials, and/or cumulative records.	1	2	3	4

Attitudes of Adult Illiterates Toward Reading Materials and Educational Programs

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There are various estimates as to the number of adults in this country who do not read well enough to be able to cope with the society in which they live; a society which uses printed words to direct its members where to find an "exit," what to do "in case of fire," how and where to catch a bus, or how to apply for social security benefits. Two years ago, at the first report of the research that has been going on at the State University of New York at Buffalo, it was noted that the number of functionally illiterate adults was estimated to be around 23,000,000 without the minimal reading skills necessary to function in our American society. It seems unlikely that the number has been greatly decreased since that time. According to Dr. Ralph Thomas, Director of the Division of Adult Education for the City of Buffalo, diligent efforts have produced an enrollment of only 450 adults out of an estimated 72,000 *functionally illiterate* people in that city.

The current study of adult illiterates in the city core areas of Western New York State, sponsored by the United States Office of Education (project 6-1136) and conducted under the Research Foundation of the State University of New York, has three main objectives:

1) To investigate the common characteristics, attitudes, knowledges, and abilities of adult city core illiterates pertinent to the improvement of reading materials and reading programs.
2) To identify a cluster of variables predictive of success in learning to read.
3) And to assess the effectiveness of a reading program using materials and techniques based on the interests, characteristics, knowledges, attitudes, and abilities of adult city core illiterates, and using the initial teaching alphabet as the alphabetic medium.

The primary concern of this paper is the findings of the first portion of the study which relate to the attitudes of the adult city core illiterate toward educational programs and materials. Hieronymous, a noted authority in the field of measurement, once remarked that when we can find some way of measuring attitudes we will have arrived at a basic understanding of how to effect gains in reading achievement.

Quantification of attitudes, however, is a tremendously difficult task. This is probably one of the reasons why so little has been done to assess the attitudes of students in adult basic education classes.

Some relatively recent attempts have been made to evaluate such attitudes, however.

One such attempt was made by the Greenleigh study. (2) Although the report did not specifically list attitudes of the adult participants *before* the program, and although the writers of the report readily admitted that they had been unable to *quantify* attitudinal changes, they still reported observed changes from an apathetic and fearful attitude to one reflecting more confidence. They marked positive changes in such areas as self-esteem and self-confidence, attitude toward learning, and levels of aspiration. Interestingly enough, they note the failure of a check sheet attempt to determine changes *quantifiably* in attitude, noting their belief that the failure was possibly due to student fear of getting in trouble later with the welfare department!

In the report of the Missouri Adult Vocational Literacy Materials Development Project, (3) which has just been released, the writers note that adults doubt their ability to learn, and further note their ". . . sensitivity to failure in learning situations," requiring greater than usual need to insure success. They also remarked on the tendency of the adult illiterate to "give up early on a learning task."

In a report published in 1965 by the Department of Labor, (4) Secretary Wirtz stated that in his experience the attitudes of adult illiterates ranged from realism toward self and society to genuine, untreated psycopathy. The 207 subjects in the research project in Buffalo and Niagara Falls, New York, certainly reflected a similar range of attitudes!

There are dangers involved in the identification of "group attitudes," however. Chilman (1) points out that there is often a tendency to lose sight of these people as individuals. It is a grave mistake to believe that if *most* people have a certain attitude, *all* people have that attitude. Chilman makes the point that transferring measures of groups to measures of individuals is a hazardous business.

It is also possible to fixate on the negative aspects of an illiterate adult, and forget that there are strengths toward which one may build. Some of the subjects in the research study illustrate the individuality and the strengths of specific cases.

Imagine yourself for a moment, in the position of one subject. After two years of successful employment in a nursing home, her inability to read was discovered, and she was discharged. She eventually relocated herself as a cook in private home. Again, however, after two years of employment, her employer found she could not read a note left for her and promptly, though "regretfully" discharged her. A third time she looked for and found employment. This time she successfully carried out a manual task in a laundry for two more years. As before, one day the manager found that she couldn't read, and she lost her job. Robert Luke, Director of the Division of Adult Education of the N.E.A. comments that the illiterate is the " . . . last to be hired, and the first to be fired."

It took courage for this lady to enroll in a night school class for adult illiterates. She, an attractive woman in her late forties, had to go alone into an unfamiliar situation, into a class where she didn't know anyone, and perhaps worst of all, she didn't know enough to be able to read or write. But she did it. We must chart her dominant attitude as one of courageous determination.

Or take the case of a gentleman we shall call Mr. Samuels. One of eleven children, his parents realized that their poverty made it impossible for them to be able to educate all their children in a conventional fashion. Therefore his mother and father decided to educate the eldest son, hoping that he in turn would be able to teach the younger children, of which Mr. Samuels was one. The whole family economized to provide enough for the one boy to go to school. After he had completed the first three years, however, he told his parents that he still didn't know enough to be able to teach his younger brothers and sisters. So they continued to sacrifice for him until he finally got into high school even though Mr. Samuel's mother died when he was fourteen. The family still held to its goal of educating the eldest so that he might share his education.

The brother was highly successful. So successful that he finished high school and went on to college. By now there was no question of going back to teach brothers and sisters. He married and continued his schooling, eventually receiving his Ph.D. from a major university. Total output of this family: one Ph.D. and ten other children who had difficulty reading their own names.

Mr. Samuels, a distinguished appearing middle-aged gentleman who could pass for anyone's family doctor, is one of the ten "other children." However, his determination and humility have brought him to adult basic education classes on three occasions. Because he is such a fine-looking man who had mastered the art of fine speech, he was placed too high in reading classes to be successful the first two times. He determined to try a third time, and this time insisted on beginning level placement. He has since progressed to the second-level class and has relaxed sufficiently to begin really enjoying his classwork, and has even permitted the taping of his reading by our researchers. We would chart his attitude as business-like and determined.

It is often as hard for a researcher not to have favorites as it is for a classroom teacher. This is especially true when the subject is shrewd, outgoing, wise, practical, and good-humored, as was one of our subjects. We will call him Mr. Lyons. He is a big man. He has lived in Western New York for 15 years. He was born and reared in a rural Southern community where his father worked in a saw mill and farmed. Mr. Lyons now reads at a middle second-grade level.

He is sufficiently well-versed in the Bible to instruct one of the research assistants who was administering an experience inventory to him on many things the research assistant had never bothered to learn before. He responded with enthusiasm to the items on the inventory which had religious connotations.

Mr. Lyons has been one of our most helpful critics. His outspoken frankness in mentioning our inevitable mistakes in the production of materials has been a delight, and has produced a certain toughening of the skin on the part of those primarily responsible for the reproduction of materials. It was through him, for example, that we came to realize that the size of the type we were using for the production of lessons in the initial teaching alphabet was too small for some of the students to read easily. He also pointed out that it was harder to read print dittoed on colored paper than on white paper.

He sings lustily and laughs freely, but also seems to have learned the value of circumspection regarding personal affairs. When Mr. Lyons asks in the hall, "But why didn't you come in to see us tonight?" it is hard to resist a visit the next time around! *His* attitudes are reflective of many positive values: concern, warmth, enthusiasm, social awareness, and many more.

This past summer we were able to observe students during an eight-week pilot program. The attitudes and behaviors of two men were particularly notable. If citations were given for outstanding attitudes, these gentlemen would certainly qualify. One gentleman had had no previous school experience. Let us call him Mr. Beach. His fellow student, who had had a short time in the first grade as a boy and four months of adult evening school, we shall call Mr. Tracy.

Mr. Beach's progress was unbelievably slow. He did not know a single letter of the alphabet. He had never even written any letters of the alphabet other than those which appeared in his name. But he brought unbelievable patience and persistence to his work. Mr. Beach did not miss one class during the eight-week period of the pilot program, even though it took him 40 minutes to get to class and 40 minutes to get home, and it involved a transfer of buses both ways. He was late once--when his bus was delayed in traffic due to the riot which occurred in Buffalo in the early summer. Otherwise, his record was perfect. His persistence in the face of agonizingly slow progress was remarkable.

Undoubtedly some of Mr. Beach's attitude was reinforced by the attitude of one of his classmates, Mr. Tracy. In contrast, however, to Mr. Beach's slow progress, Mr. Tracy learned quickly and moved eagerly from one beginning reader to another. When tapes were made Mr. Tracy usually read two or three levels above Mr. Beach.

If they read from the same material, Mr. Tracy would read and Mr. Beach would "echo." Never once in eight weeks did Mr. Tracy reprimand or mock Mr. Beach. Instead, his graciousness and thoughtfulness of Mr. Beach's feelings was most apparent. He praised Mr. Beach with sincerity as Mr. Beach made progress, however limited. It was interesting to see respect develop between the two men who, although of different status, each manifested genuine concern for the other. Such attitudes are easily lost in group statistics.

A 21-year-old girl whom we shall call Shirley scored far below norms on both of the individually administered tests of intellectual capacity. Although she indicated on the experience inventory that she had completed eighth grade, it was hard to believe that it was more than token completion since her reading ability was recorded at a middle first-grade level. Shirley had lived in Western New York four years. Her responses were shy and expressionless. It was hard to judge whether her atitude was one of hostility or insecurity, but in the months since her enrollment her observed attitudinal change has greatly improved. So notable has her improvement been that on a recent visit by one of the researchers to her class she actually smiled when asked if she would be willing to read before a tape recorder so that a record of her reading could be made. Her classroom attitude has become more secure, and it is obvious from the tape recording that Shirley has actually begun to learn to read. Gain scores alone, however, could never reflect the change that has taken place in this youngest of the participants in the current study.

DESCRIPTION OF THE INSTRUMENT

The Experience Inventory used for the present study included the following sections:

(1) *Subject Identification and Background*, including occupation of parents, reading level of family or others with whom the subject lived as a child, and the subjects' judgment of what caused his reading difficulty. This section also identifies why the subject reported he wanted to learn to read, his previous school attendance, and the reading abilities of the other people in his present immediate family.

(2) *Possessions and Functional Knowledges*, assessing not only the sorts of common possessions which the subjects had, but also whether he had obtained a general functional knowledge about such things as a car, a home, a television set, et cetera.

(3) *General Knowledge*, including map reading ability, directional orientation, temporal sense, and other items.

(4) *Reading Associated Interests*, in which each suject must make a forced choice between matched fabricated titles representative of the six following major categories:

1) Children, animals, and humor
2) Sociology, history and civics

3) Family and self-improvement, jobs and health
4) Religion
5) Sports, adventure, and travel
6) Science and math

The subjects were asked to choose one title in each pair, each category being matched with each other category twice in the instrument.

This portion of the research study was based on a sample population of 207 subjects who were attending classes in adult basic education in the schools of Buffalo and Niagara Falls, New York. In order to be selected for the program, subjects had to be reading at less than third grade level as measured by the reading section of the Stanford Achievement Test.

Certain of these items in the Experience Inventory were felt to be particularly helpful in assessing what the attitudes of adult illiterates were. For this report information is gathered on the items which ask: 1) Did you have all you needed to eat? (Nutrition was considered to be a possible index of severe deprivation affecting attitude.) 2) What was the chief cause of your reading difficulty? 3) Why did you want to learn to read? 4) If you felt that a radio or TV program was bad, that is, that it might hurt or offend someone, whom would you call to complain to? and, of major importance, 5) Reading associated interests in which they were to select their own particular choice from a series of paired titles, each title representative of one of the six categories mentioned previously.

ANALYSIS OF THE DATA

From the pool of 207 subjects, a group of 18 high achievers and a group of 22 poor achievers were identified. The high achievers gained from .8-2.8 years while the poor achievers made no measurable gain in approximately 200 hours of instruction.

In analyzing the self report of both the achievers and non-achievers as to the chief cause of their reading difficulty, 38% of the non-achievers indicated that no school had been available in order for them to learn to read. None of the achievers indicated this response. It's interesting to note that neither achievers nor non-achievers listed poor teaching as a cause for their reading difficulty. The achievers generally listed more reasons for their lack of achievement, indicating personal disinterest, parental disinterest, illness, being foreign born, and the necessity to go to work. None of these were mentioned by the non-achievers. The non-achievers, on the other hand, indicated no school was available and that they had a lack of personal ability to profit from reading instruction. Neither of these two were mentioned by the achieving group. These results are listed in Table 1.

On Table 2 is a comparison of the responses of the achievers and non-achievers as to sex, welfare status, judgment of whether or not the subject had enough to eat as a child, why the subject wanted to learn to read, and what the subject would do if TV or radio programs were offensive. Twenty-five percent more of the non-achievers than achievers were on welfare. Sex differences followed the usual pattern for reading difficulty. Twenty-two percent more males were non-achievers. Nineteen percent more of the achievers indicated they always had enough to eat when they were children. Although the figures are less marked for the other possible choices, it seems that the non-achieving group had less to eat as a whole than the achieving group, as children. This seems to indicate a more economically deprived background for the non-achieving group.

In terms of reaction to an offensive television or radio program there seemed to be little difference between achievers and non-achievers. However, more of the achievers indicated they did not know what should be done when faced with the problem of trying to report an objectionable TV or radio program.

Table 3 presents the frequency of selection in the reading associated interests in which each subject had to make a forced choice between matched titles which were representative of the various major categories. When the responses of the 175 subjects were placed in rank order it was found that the category entitled "Sports, adventure and travel" was chosen least frequently, as reflected by an analysis of the bottom quartile of titles. (Incidentally, we had anticipated that this particular category would be one which would be chosen quite frequently.)

Next least admired is the category headed "Children, animals and humor." This seems to contradict the popular conception that our adult city core illiterate group as a "childlike good-natured and rurally attuned population." Certain science titles did not appeal to this population either. They seem to be titles which might be less intimately related to what we might call traditional science. One of the titles was "Life in the Ocean," another "The Dinosaur Book" and the third was "Fun With Numbers." The category "Sociology, history and civics" was only found among the least wanted titles one time. The category of "Family and self-improvement, jobs, and health" did not appear at all, and the category of "Religion" did not appear at all.

In moving to the top quartile we find that the category of "Children, animals and humor" did not appear even one time among the most liked titles. Category 5, "Sports, adventure and travel," appeared only once as did Category 6, "Science and math." Leading the way among the most popular titles was the third category, "Family and self-improvement, jobs and health." Close behind was Category 4, "Religion," followed by Category 2, "Sociology, history and civics," which had three titles in the top quartile. In Tables 4, 5 and 6 the percentage of subjects choosing each title is compared to the percentage of subjects choosing the alternate or matched title. This gives an indication of the general preference of one category in comparison to each of the other five categories. The sample for this section of the study was 175 subjects. The total does not always reach 100% because some subjects refused to make choices between the titles no matter how strenuously they were urged to do so. Each category was compared with each other category twice. The preferences for the first half of the measure are reported in Table 4, the second half are in Table 5, and totals for both halves appear in Table 6. The double comparison provided an opportunity to check the reliability of the category preference. A comparison between Tables 4 and 5 shows that there was generally high consistency between the first and second half of the measure of Reading Associated Interests. Of the 15 comparisons, 12 were generally the same in Tables 4 and 5. The three which differed in preference were Categories 2 with 6, Categories 3 with 4, and Categories 5 with 6. An analysis of the strongest preferences showed that "Family and self-improvement," Category 3, was most heartily approved over Category 6 which was "Science and math," at a combined level of 95% to 5%. Next was Category 4, "Religion," over Category 5, "Sports, adventure and travel," followed by Category 3, "Family, self-improvement," to 5, "Sports and adventure." Next was the preference of religious titles to those of "Children, animals and humor," and fifth was preference for sociological, historical and civic titles to children's titles.

Certainly related to attitude but actually involved in the prediction of success in learning to read was the division of the same population into high achieving and non-achieving students comparing their preferences for story titles. If one were to arbitrarily select 20 percentage points or greater as having some pragmatic significance, the most immediately obvious point is that there is little difference between those who are achievers and those who are non-achievers in the titles that they prefer. Twenty-three out of the 30 possible choices were quite similar. In the remaining seven titles, however, the achievers preferred:

Let's Go to Hawaii	23%	(More strongly)
A Trip in Space	20%	(More strongly)
The Story of the Stars	36%	(More strongly)
Experiments with Electricity	36%	(More strongly)
Our Greatest President	28%	(More strongly)
The Ladder to Heaven	22%	(More strongly)
How Science Saves Lives	31%	(More strongly)

The most consistent factor in the selection of the titles differentiating achievers and non-achievers is that the achievers more heavily preferred science titles than did the non-achievers. For example A Trip in Space, The Story of the Stars, Experiments With Electricity, and How Science Saves Lives were all much more heavily favored by the achievers than the non-achievers. It also seems that the achievers tended to choose a somewhat more sophisticated title, that is, one which seems to imply a more intellectually complex or abstract concept than the non-achievers did in each case.

SUMMARY

In summary, a review of research in the area tends to support the statement that adult illiterates are somewhat more dependent, less sure of themselves, and have a poorer self-concept than their better-educated contemporaries. The case studies in this paper show that positive factors of determination, motivation, personal courage, humility, concern, social awareness, warmth and enthusiasm, are often present in high degree in those persons who come to adult education centers with the hope of learning to read. It would seem that these are strengths which need to be recognized and utilized in constructing better educational programs. However, these qualities need to be more effectively measured as they bear on the progress of the students in adult basic education programs.

In the measures of groups of illiterates, it was notable that the high achievers tended to be less frequently on welfare, more frequently women than men, to have come from a less deprived background, to have more varied causes for their reading difficulty and in selection of titles although generally reflecting much the same attitude as their non-achieving classmates, they did tend to show some preference for science titles and for more sophisticated titles than the non-achievers did.

It must be remembered, however, that the sample was small for this portion of the study. The general population preference for categories of reading materials indicated that titles most frequently selected dealt with 1) family and self-improvement, jobs and health; 2) religion, and 3) sociological, historical, and civic titles. Titles least frequently chosen were those dealing with sports, adventure and travel; children, animals and humor; and finally, science and math.

The high achieving group tended to prefer titles dealing with science and math. In the preparation of materials for good educational programs for adult illiterates it not only seems important to prepare materials in the area of family, self-improvement, jobs, health, perhaps religion, sociology, history and civics, but also to include titles for our most capable group who seem to prefer work in the area of science and math.

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TABLE 1

A COMPARISON OF THE SELF-REPORT OF ACHIEVERS AND NON-ACHIEVERS AS TO THE CHIEF CAUSE OF THEIR READING DIFFICULTY

Judgment of What Caused Reading Difficulty	Achievers		Non-Achievers	
	N	%	N	%
Personal Disinterest	2	13		
Parental Disinterest	1	6		
No School Available			6	38
Poor Teaching				
Illness	2	13		
Needed at Home	7	44	8	50
Misc. or Inappropriate	1	6	1	6
Foreign Born	1	6		
Ability			1	6
Financial: had to go to work	2	13		
Total	16	101	16	100

TABLE 3

FREQUENCY OF CHOICE OF ANY ONE TITLE OVER ITS PAIRED ALTERNATE CHOICE EXPRESSED IN TERMS OF PERCENTAGE: TITLES CHOSEN LESS FREQUENTLY

Percentage of Choice	Title	Category
3	The Witch in the Forest	1
3	The Dinosaur Book	6
6	The Winning Team	5
6	Fun With Numbers	6
7	Dead Man's Treasure	5
7	Floating Down the Mississippi	5
9	Puff Gets Lost	1
9	Lost in a Cave	5
10	A Surprise for Dick and Jane	1
11	Bombs, Bullets and Bread	2
12	My Funniest Moments	1
13	King of Horses	1
13	Life in the Ocean	6
14	Touchdown	5
16	Fishing Tales	5
19	These Are Your Rights	2
23	Jokes and Funny Stories	1
23	Heroes of the Old Testament	4
24	The Horse Who Couldn't Bark	1
25	Animals I Like	1
30	Soldiers for Peace	2
32	How the Weather is Changing	6
33	The Story of the Stars	6
34	March for Freedom	2
34	Hunting Stories	5
35	Up From the South	2
40	Tom and Jane Help Father	1
40	Learn to Fix TV Sets	3
41	How Science Saves Lives	6
45	The Duck That Could Not Fly	1
54	A Trip in Space	6
59	When Adam Walked With God	4
59	Experiments with Electricity	6
60	Missionaries Paul and Silas	4
64	What Makes It Rain	6
66	The Story of the Cross	4
66	The Story of World War II	2
66	Ways to Improve Your Appearance	3
68	The Fight for Freedom	2
70	Jesus and the Woman at the Well	4
75	100 Ways to Make Money	3
76	Let's Go to Hawaii	5
76	Football Champs	5
77	How to Have a Happy Home	6
80	The Life of Jesus	4
84	Science and You	6
86	Our Next President	2
86	How to Have a House of Beauty	3
87	Our Trip to Canada	5
87	The Beloved Disciple	4
89	How to Raise Children	3
90	A Job I Liked	3
91	How to Eat Better	3
91	The Ladder to Heaven	4

91	Lincoln, Man of Peace	2
93	Our Greatest President	2
94	Better Health and Longer Life	3
94	Stories of the Bible	4
97	Being a Better Christian	4
97	Train Yourself for a Better Job	3

TABLE 4

PERCENTAGE OF SUBJECTS CHOOSING TITLES REPRESENTING EACH OF THE CATEGORIES* WHEN FORCED TO CHOOSE BETWEEN MATCHED PAIRS OF TITLES FROM DIFFERENT CATEGORIES ON THE FIRST HALF OF THE MEASURE OF READING ASSOCIATED INTERESTS

N - 175

Category Number	2	3	4	5	6
1	13/86	10/90	3/97	23/76	45/54
2		11/89	19/80	66/34	35/64
3			77/23	91/9	94/6
4				94/6	66/33
5					16/84

The categories to the left are represented by the figures to the left of the slash mark; the categories at the top of each column are listed to the right of the slash mark.

*Categories: 1—children's stories, animal stories, and humor
2—sociological, historical, and civic titles
3—family and self improvement, jobs, health
4—religion
5—sports, adventure, and travel
6—science and math

TABLE 5

PERCENTAGE OF SUBJECTS CHOOSING TITLES REPRESENTING EACH OF THE CATEGORIES* WHEN FORCED TO CHOOSE BETWEEN MATCHED PAIRS OF TITLES FROM DIFFERENT CATEGORIES ON THE SECOND HALF OF THE MEASURE OF READING ASSOCIATED INTERESTS

N - 175

Category Number	2	3	4	5	6
1	9/91	25/75	12/87	24/76	40/59
2		34/66	30/70	93/7	68/32
3			40/60	86/14	97/3
4				91/7	59/41
5					87/13

The categories to the left are represented by the figures to the left of the slash mark; the categories at the top of each column are listed to the right of the slash mark.

*Categories: 1—children's stories, animal stories, and humor
2—sociological, historical, and civic titles
3—family and self improvement, jobs, health
4—religion
5—sports, adventure, and travel
6—science and math

TABLE 6

PERCENTAGE OF SUBJECTS CHOOSING TITLES REPRESENTING EACH OF THE CATEGORIES* WHEN FORCED TO CHOOSE BETWEEN MATCHED PAIRS OF TITLES FROM DIFFERENT CATEGORIES ON COMBINED HALVES OF THE MEASURE OF READING ASSOCIATED INTERESTS

N - 350

Category Number	2	3	4	5	6
1	11/89	18/82	8/92	24/76	43/57
2		22/78	21/76	79/21	52/18
3			58/42	88/12	95/5
4				93/6	63/37
5					52/48

The categories to the left are represented by the figures to the left of the slash mark; the categories at the top of each column are listed to the right of the slash mark.

*Categories:
1–children's stories, animal stories, and humor
2–sociological, historical, and civic titles
3–family and self improvement, jobs, health
4–religion
5–sports, adventure, and travel
6–science and math

The Convergent and Discriminant Validity of Several Upper Level Reading Tests

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The purpose of this paper is to report on the use of a somewhat new but not well-known technique for investigating the construct validity of tests. The second purpose is to show how this technique has been used to study the construct validity of several high school and college level reading tests that include subtests of specific reading skills.

There has been a plethora of investigations dealing with the validity of reading tests. Most of these studies have attempted to isolate specific factors of reading behavior, often employing the factor analytic technique. Lennon (8) reviewed twelve of these investigations in a 1962 article entitled, "What Can Be Measured?" In concluding his article Lennon stated: "It would seem that we may recognize and hope to measure reliably the following components of reading ability: (1) a general verbal factor, (2) comprehension of explicitly stated material, (3) comprehension of implicit or latent meaning, and (4) an element that might be termed 'appreciation.'" (8) This cautious statement by Lennon may be an over-simplification of the evidence he presents. As indicated by Table I the twelve reported studies cover a span from 1940 to 1960; the reported factors vary from a global unifactor to one study which reported 16 factors. Another variable which differed greatly across studies was the age of subjects (ranging from 5th-graders to adults).

Partially as a result of the studies reported by Lennon and similar studies reported by other researchers, and partially because of a dissatisfaction with the ability of group standardized reading tests to indicate specific subskill reading problems, reading authorities have cautioned against accepting the validity of a sub-test score simply because it purports to measure a given skill.

Papers reported in the yearbooks of the National Reading Conference have cogently underscored these problems. Raygor (13) reported serious misgivings concerning sub-test validities. Reasons for the lack of validity were outlined by Kingston (7) who suggested that the basic problem was caused by the lack of reading tests based on sound theoretical and empirical evidence of the make-up of reading ability. This problem was reiterated by McDonald who stated: "Measurement is useless without a clear theoretical sub-structure. Unless we know what we are trying to find, the utility of our measures will only be a function of our uncertainty." (9)

TABLE I

Summary of Factor Analysis Studies of Reading Tests

"What Can Be Measured?" Roger T. Lennon, *The Reading Teacher*, March 1962.

INVESTIGATOR(S)	DATE	TESTS	FACTOR(S)	SAMPLE
Traxler	1941	Van Wagenen-Dvorak Diagnostic Examination of Silent Reading Abilities	General Reading Level (uni-factor)	116 10th grade
Gans	1940	Critical Analysis of reading material Thorndike-McCall Calif. Mental Maturity (6 parts) Gates Silent Reading	3 factors: Reading ability Selection-rejection (critical analysis) Delayed recall	117 3rd-5th grade
Davis	1941	Davis (designed to measure 9 factors)	5 factors: *Word Knowledge *Reasoning Ability Literal Meanings Inference Ability to follow organization of a selection Knowledge of literary devices and techniques *dependable	
Thurstone	1946	Reanalysis of Davis data (1941)	General Reading Level (uni factor)	
Langsam	1941	5 reading tests (14 subtests) 1 intelligence test (7 subtests)	Five factors: much overlap Verbal (word meaning) Perceptual Word (fluency) Seeing relationships Numerical	

INVESTIGATOR(S)	DATE	TESTS	FACTOR(S)	SAMPLE
Conant	1942	Nelson-Denny Reading Test Amer. Council Psychol. Exam 1 Reading Test (specially designed)	General Comprehension (uni-factor)	
Artley	1942	Coop C-1 Level of Comprehension Coop Social Studies Ability Coop Social Studies Proficiency Coop Social Studies Survey	Not uni-factor (for all Ss)	200 11th graders
Hall, Robinson	1945	25 specially designed subscales (incl. tests of reading & non-prose material)	5 factors: Attitude of comprehension Inductive factor Verbal or word meaning Rate for unrelated facts Chart Reading Unnamed	100 College Ss
Harris	1948	Battery specially designed to measure 7 subskills	General reading level (uni-factor)	Adults
Maney, Sochor	1952	Gates Survey Test Pintner General Ability Test (Verbal Type) Tests specially designed to measure Comprehension of Science Social Studies Material	Not uni-factor	500 5th graders
Hunt	1952	Tests specially designed to measure Davis's (1941) 6 factors	Two factors: Reasoning ability Word knowledge	
Stoker, Kropp	1960	Iowa Tests of Educ. Dev. subtests Ability to interpret reading materials	General (mental ability)	9th graders

TABLE 2

COMPARISON OF RESPONSES OF ACHIEVERS AND NON-ACHIEVERS AS TO SEX, WELFARE STATUS, JUDGMENT OF WHETHER OR NOT SUBJECT HAD ENOUGH TO EAT AS A CHILD, WHY THE SUBJECT WANTS TO LEARN TO READ, AND WHAT SUBJECT WOULD DO IF TV OR RADIO PROGRAM WAS OFFENSIVE

		Achievers		Non-Achievers		Diff. in
		N	%	N	%	% Points
Welfare Status	Welfare	11	61	19	86	25
	Non-Welfare	7	39	3	14	25
	Total	18	100	22	100	
Sex	Male	9	47	16	69	22
	Female	10	53	7	31	22
	Total	19	100	23	100	
Did you always have enough to eat?	Always (1)	12	80	11	61	19
	Usually (2)	3	20	5	28	8
	Seldom (3)	0	0	2	11	11
	Never (4)	0	0	0	0	
	Total	15	100	18	100	
Why do you want to learn to read?	Job security & advance	3	13	6	19	6
	Bible & religion	1	4	2	7	3
	Help children & others	2	9	1	3	6
	Misc.	3	13	3	10	3
	Genl. Self-education	7	30	8	26	4
	News & travel	4	17	6	19	2
	Learn spec. skills	3	13	5	16	3
	Total	23	100	31	100	
If you felt that a TV or radio program was bad . . .	1=I don't know	3	21	1	6	15
	2=Inappropriate	2	14	2	11	3
	3=No objection	2	14	4	22	8
	4=Contact someone outside the home	0	0	4	22	
	5=Contact station; radio or TV	7	50	7	39	22
	Total	14	99	18	100	11

The consequences of using invalid tests of sub-skills of reading ability can perhaps be recognized best by considering a common public school technique. Following the administration of the XYZ reading test, the building principal and the English department members review the results. They note that the students have scored quite poorly on comprehension but have done quite well on vocabulary. Armed with this knowledge they begin developing plans to correct the "identified" weakness. Or, it may be that the students have scored at a very low level on the reading rate section of the test. This performance sets in motion the development of a purchase order for a room full of reading pacers. The administrators and teachers in this hypothetical, but all too often repeated situation, are following the preachings of their education professors. Determine the students' needs, diagnose their weaknesses, and then plan instruction to meet those needs. A very serious problem arises in this procedure if the sub-tests used to identify specific problems are not valid measuring instruments for the skills named.

The two studies reported below were attempts to investigate the sub-test validity of several upper-level reading tests through a procedure suggested by Campbell and Fiske in 1959. (3) Basically, the definition of convergent validity means that if a test developer indicates that his test measures separate and distinct variables, each of these variables should correlate at a fairly high level with other tests attempting to measure the same skill. This correlation generally comprises the validity coefficient reported for the great majority of reading tests. Just as important, however, a measured trait should correlate at a lower level with traits from which it is supposed to differ. This will be referred to as discriminant validity, and evidence of this type of validity is almost always lacking in the test manuals. Recent articles by Anastasi (1) and by Millholland and Fricke (10) have stressed the value of the Campbell and Fiske procedure in establishing or reassessing the construct validity of a test. As Millholland and Fricke point out, "the demanding but reasonable standards imposed by the multitrait-multimethod model provide some protection against the proliferation of presumably measurable and different 'aptitudes.' " The regrettable fact is that few such validity investigations have been attempted or reported.

Before launching into the results of the studies, it may be useful to take a brief look at a hypothetical study of convergent and discriminant validity. Table II reports the results of three tests administered to some appropriate population. Each of these hypothetical tests would have similar sub-tests. For this example, let us suppose that these sub-tests are anxiety, ego-strength, and compassion. The resulting matrix of all possible correlation is organized in Table II.

TABLE II

A Synthetic Multitrait—Multimethod Matrix

		Test I			Test II			Test III		
		A_1	B_1	C_1	A_2	B_2	C_2	A_3	B_3	C_3
Test I	A_1	(1.0)								
	B_1	.51	(1.0)							
	C_1	.38	.37	(1.0)						
Test II	A_2	.57	.22	.09	(1.0)					
	B_2	.22	.57	.10	.68	(1.0)				
	C_2	.11	.11	.46	.59	.58	(1.0)			
Test III	A_3	.56	.22	.11	.67	.42	.33	(1.0)		
	B_3	.23	.59	.12	.43	.66	.34	.67	(1.0)	
	C_3	.11	.11	.45	.34	.32	.58	.58	.60	(1.0)

A = Anxiety
B = Ego Strength
C = Compassion

Note: The *validity coefficients* are those values on the diagonals not inside any of the triangles. Each *heterotrait-monomethod* triangle is enclosed by a solid line. Each *heterotrait-heteromethod* triangle is enclosed by a broken line.

The interpretations of this matrix would follow these steps:

1. The entries in the validity diagonals (those values on the diagonals not inside the triangles or the parentheses) should be significantly different from zero and sufficiently large to encourage further examination of validity. This is evidence of *convergent validity.*

2. Second, a validity diagonal value should be higher than the values found in the same column and row in the heterotrait-heteromethod (dotted) triangles. That is, a validity value for a variable should be higher than the correlations obtained between that variable and any other variable having neither trait nor method in common. This is evidence of *discriminant* validity.

3. A third common sense desideratum is that a variable correlates higher with an independent effort to measure the two same traits than with measures designed to get at different traits which happen to employ the same method. For a given variable, this involves comparing its values in the validity diagonals with its values in the heterotrait-monomethod (solid line) triangles. This also is evidence of *discriminant* validity.

4. A fourth criterion is that the same pattern of trait interrelationship be shown in all of the heterotrait triangles of both the monomethod and heteromethod blocks. This provides additional evidence of *discriminant* validity.

A close examination of Table II supports the conclusion that the sub-tests of these three hypothetical tests meet the criteria for convergent and discriminant validity in almost every case. If several reading tests were treated in the preceding manner, it would be hoped that this same pattern would exist and if so would indicate that the sub-tests are indeed valid measures of the named skills.

I. The first part of the present investigation used a sample of 67 ninth grade students of average ability. They were administered three reading tests, all of which were regarded by their publishers to appropriate for ninth grade students.

The battery included the following: (1) *Nelson Reading Test, Form A* (1962); (2) *California Reading Test,* Advanced: Grades 9-14 (1950); (3) *Gates Reading Survey,* Form I (1958). Each of these tests includes a sub-test for vocabulary and comprehension plus a total reading score. In addition, the *Gates Reading Survey* has a sub-test to measure reading speed. Pearson correlation coefficients were computed among all sub-test and total scores, and these are reported in Table III.

TABLE III
Multitrait-Multimethod Correlation Matrix For Three Secondary Reading Tests

		NELSON			CALIFORNIA			GATES SURVEY			
		Voc.	Comp.	Total	Voc.	Comp.	Total	Voc.	Comp.	Total	Speed
NELSON	Vocab.	(1.0)									
	Comp.	.80	(1.0)								
	Total	.95	.95	(1.0)							
CALIFORNIA	Vocab.	.76	.73	.79	(1.0)						
	Comp.	.76	.65	.74	.73	(1.0)					
	Total	.82	.74	.82	.91	.95	(1.0)				
GATES SURVEY	Vocab.	.63	.48	.58	.67	.68	.73	(1.0)			
	Comp.	.55	.42	.51	.51	.68	.65	.60	(1.0)		
	Total	.72	.60	.69	.68	.81	.81	.78	.87	(1.0)	
	Speed	.62	.54	.70	.60	.71	.71	.44	.66	.81	(1.0)

Note: The *Validity Coefficients* are those values on the diagonals not inside any of the triangles. Each *heterotrait-monomethod* triangle is enclosed by a solid line. Each *heterotrait-heteromethod* triangle is enclosed by a broken line.

From a careful examination of the Table III matrix, and according to the multitrait-multimethod criteria, the following results seem noteworthy:

1. The fairly high correlations between all ten variables suggests

rather clearly that the three tests are measuring something in common. The variables all meet the criteria for convergent validity.

2. The validity coefficients for the three comprehension and vocabulary sub-tests (those correlations not included within any of the nine triangles) should logically be higher than the corresponding heterotrait-heteromethod values. In other words, they should be higher than other values along the same row or column which are within the two adjacent triangles representing different traits measured by different instruments. However, in over half the cases the validity coefficients are lower, indicating a great deal of trait similarity, but most importantly, a lack of discriminant validity.

3. The validity coefficients should also be higher than the values appearing within the heterotrait-monomethod (solid) triangles. In 83 percent of the cases, however, they fail to meet this criteria, further indicating a lack of discriminant validity.

4. It should be further noted that each sub-test correlates higher with the total score than it does with other sub-tests. While this may indicate that each sub-test is contributing a specific portion to the total test variance, it must also be recognized that the total test would tend to be more reliable than any of its sub-tests.

To further examine the correlation matrix, a factor analytic technique was employed. The principal components solution was used, and, as might be expected from the preceding results, only one factor with an eigenvalue greater than one was isolated. This factor accounted for over 70% of the total variance of all the sub-tests.

II. The second aspect of this study was to determine if these same results would appear when an older population was used. A group of 91 undergraduate education majors attending the 1967 summer session at the State University of New York at Buffalo were administered the tests. Most of these students were between their junior and senior years. Because the Gates Survey was not appropriate to this age level, the *Co-op Reading Test* (4) was substituted and the *Nelson-Denny Reading Test* replaced the *Nelson Reading Test*. Pearson moment correlations were again computed for all sub-test scores and the results appear in Table IV.

Following the criteria suggested by Campbell and Fiske, and as for the ninth-grade population, the following results are of note:

(1) The fairly high correlations for most of the variables indicate strong evidence for convergent validity. The only exception to this pattern is the speed sub-test of the Nelson Reading test where the correlations are comparatively low.

(2) The validity coefficients for the vocabulary sub-tests of the Nelson, the California and the Co-op Reading were higher than the corresponding heterotrait-heteromethod values. In other words, the correlations of two different tests measuring the same trait (in this

TABLE IV

Multitrait-Multimethod Correlation Matrix For Three College Level Reading Tests

		NELSON				Co-op Reading				CALIFORNIA		
		Voc.	Comp.	Speed	Total	Voc.	Level of Comp.	Speed of Comp.	Total	Voc.	Comp.	Total
NELSON	Vocab.	(1.0)										
	Comp.	.73	(1.0)									
	Speed	.46	.31	(1.0)								
	Total	.95	.91	.43	(1.0)							
Co-op Reading	Vocab.	.79	.68	.40	.79	(1.0)						
	Level of Comp.	.51	.62	.23	.57	.44	(1.0)					
	Speed of Comp.	.66	.70	.27	.72	.57	.79	(1.0)				
	Total	.81	.78	.39	.86	.87	.71	.90	(1.0)			
CALIFORNIA	Vocab.	.59	.49	.45	.59	.62	.55	.54	.69	(1.0)		
	Comp.	.55	.64	.38	.64	.41	.65	.80	.70	.46	(1.0)	
	Total	.65	.68	.46	.72	.58	.69	.81	.80	.74	.93	(1.0)

Note: The *Validity Coefficients* are those values on the diagonals not inside any of the triangles. Each *heterotrait-monomethod* triangle is enclosed by a solid line. Each *heterotrait-heteromethod* triangle is enclosed by a broken line.

case vocabulary) were higher than the correlations of different traits measured by different tests. This indicates that the vocabulary sub-tests do meet the criteria for discriminant validity. This same positive result is true for the comprehension sub-tests of the California and the Nelson tests but is not the case for the Co-op Reading. An examination of the correlation matrix for the Level of Comprehension and the Speed of Comprehension of the Co-op Reading, and the speed sub-test of the Nelson give no indication of discriminant validity.

(3) The validity coefficients for the vocabulary tests of the Nelson, California and Co-op were compared to the values in the heterotrait-monomethod triangles and in 79% of the cases the validity coefficients were higher than the values of the heterotrait-monomethod triangles, further supporting the evidence of discriminant validity for the vocabulary sub-tests. For the comprehension sub-tests this criterion was met in 72% of the cases. For the speed sub-test of the Nelson this criterion was met in none of the cases.

(4) As in the case of the ninth-grade study each sub-test correlated higher with total test scores than it did with other sub-tests. Again the conclusion seems warranted that each sub-test is perhaps con-

tributing a specific portion of the total test variance, but it must also be recognized that the total test would tend to be more reliable than any of its sub-tests.

As with the previous sample, the correlation matrix was factor analyzed using the principal components solution. Two factors were isolated with eigenvalues larger than unity. The first factor loaded heavily on the Nelson Vocabulary, Co-op Vocabulary and the California Vocabulary tests. Factor two loaded heavily on the Nelson Comprehension, Co-op Level of Comprehension and Speed of Comprehension, and the California Comprehension.

The first factor was labelled reading vocabulary and the second reading comprehension. The vocabulary factor accounted for 60% of the total test variance and the comprehension factor for 13% of the total test variance.

The results af the factor analysis were in agreement with the discriminant validity evidence represented by the correlation matrix in Table IV.

Conclusions. One of the most important findings of the preceding studies is the recognition of the value of the Campbell-Fiske model for investigating the construct validity of the sub-tests of reading test batteries. The general confusion in investigating construct validity, usually by the use of factor analysis, is exemplified by the Lennon article.

This statement should not be interpreted as a criticism of factor analysis for investigating various factors which determine reading performances, but it should point out the weakness of factor analysis for the purpose of examining the construct validity of test scores.

A 1967 U.S. Office of Education study conducted by Davis (5), makes this point much more succinctly: "This review of the more important empirical studies of comprehension in reading over the last half century shows that, to be useful, the studies must use carefully written and selected items to measure differential skills and that large samples of examinees and highly refined statistical techniques must be employed if tiny amounts of variance unique to each skill in a set are to be successfully detected."

A further word of caution should also be made in regard to the make-up of reading ability versus the validity of sub-skills of reading ability as *measured by most standardized reading tests*. The preponderance of research by Davis and others leaves no other interpretation than the fact that reading is a conglomerate of a number of separate skills. However, lack of agreement about this make-up is exemplified in our standardized reading tests and our obvious failure to validly measure these sub-skills.

Furthermore, this report should not be taken as a suggestion that reading should be taught as a "global" factor but as a caution concerning the blind acceptance of sub-test scores. For all of the standardized reading tests reported in the above two studies, the total scores were consistently more reliable and more valid than any of the subtest scores.

Another major point should be reiterated concerning the value of discriminant validity. Test constructors can easily exhibit convergent validity with measures of reading skills, but if the sub-tests are to have diagnostic value they *must* exhibit discriminant validity. None of the test manuals for any of the tests used reported discriminant validity evidence; convergent validity was, however, reported in several instances. This lack of discriminant validity is most apparent in the study with the ninth grade students. With the college level population, some of the sub-tests did seem to give evidence of discriminant validity. A major exception to this is the rate test of the Nelson. Because of the lack of reliability of this sub-test (probably due to its very short length) and the lack of convergent and discriminant validity, it should probably not be used at all.

The differences in the discriminant validity of the sub-tests between the 9th graders and the college seniors can only be discussed with caution at this time. There are several important differences between the two groups. One, of course, is their chronological ages. The studies of Thurstone (14) and others indicate that as people mature intelligence becomes more specialized and in its earlier stages can only be measured as a global factor. This possibility should be further investigated with tests of reading ability.

A second factor is the select nature of the college population. Throughout their school careers the college students have probably been better readers than any random group of ninth-grade students. Due to this fact, the reading skills of the college students may have become more refined.

A third difference is the fact that two of the tests varied from study to study.

To further investigate some of these factors, additional studies are being conducted with a variety of age and ability groups and a larger number of reading tests.

I would like to make the point that the whole area of reading evaluation appears to be far behind the rest of the field. This is true not only for the development of new tests, the refinement of those on the market, the application of theoretical and empirical assumptions concerning reading to the development of evaluation devices; but more important in the use of reading tests and knowledge of their shortcomings by teachers and administrators. Oscar Buros (2), in his introduction to the *Sixth Mental Measurement Yearbook*, laments the fact that despite the "panning" of particular tests by reviewers they continue to gain in popularity. Even a cursory review of Buros and a limited knowledge of school evaluation practice will substantiate this statement for the area of reading measurement.

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Reading Comprehension as Implicit Verbal Behavior

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One approach to analyzing adult reading is based on the assumption that comprehension is nothing more than internal talking. In other words, a reader sees a verbal stimulus of some sort. He produces some subvocal, covert response. Then the same responses produce stimuli for further covert, internal responding. It is this "second level response," controlled in part by what the reader sees and in part by memory, long-range association, context and so on that we call "comprehension." The problem for so-called elementary reading is to find out how a visual stimulus can be made to reliably provoke the first level, or naming response, orally and then later sub-vocally. The problem for the analysis of adult reading is to find out as much as possible about the second-level response, the response to the response.

This sort of an approach is not entirely new, but few specialists in reading seemed to have used techniques to exploit it. Lowi (5) exposed short 3 to 7-word sentences on a screen for one-tenth of a second. He had college students attempt to read this material and repeated the exposure until the students read each sentence correctly. His subjects reported their introspections and covert verbal behavior between the exposure trials. He found that responses could be grouped fairly reliably. One category can be called the "perceptual response." It contained statements about shapes of words, numbers of letters and so on, e.g., "There was a word with two tall letters in the middle." A second category of response contained statements by the readers classifying the sub-threshold sentences, e.g., "I think that was a proverb." Apparently some sort of classifying process was involved in bringing these stimulus sentences above threshold. A third category of response had to do with self-correction. The students would make a response to a sub-threshold stimulus and say, "No, that doesn't seem right," or "Yes, I think that was reasonable." Lowi did not look at differences in the proportion of responses in each category as a function of student ability.

Piekarz did, however. (8) She had young children read various passages and then interviewed them later for their introspective comments. The responses were classified as either 1) literal meaning, 2) implied meaning, and 3) evaluation. The data for a typical high ability and low ability reader are reported and show that the more competent reader gave more implied meanings, and fewer literal meanings and evaluative responses. The less able reader tends to be more concrete. The differences are suspect, however, since they are for only one pair of readers. Swain (21) reports essentially the same finding—more competent readers tend to produce a higher proportion of implied and personal meanings.

These studies suggest a correlation between comprehension measures and internal verbal behavior. Good readers apparently finish reading sentences and then categorize and talk about that sentence on a covert level. They appear to say different things about what they have read than the poor readers do. It is entirely possible, of course, that the data can be interpreted as a motivation effect rather than as a measure of subvocal speech. It is possible that students who in the past have been told that they are poor readers tend not to talk much about things they have read. That is, poor readers may have the same kind of internal responses but they are a bit more reticent about bringing them out and making them public. In any event, I gave the reports that I have cited some provisional credence because they suggested a general attack on the reading comprehension question.

In a series of experiments college students were seated in front of a screen on which they saw a single word from the Kent-Rosanoff list. They are instructed to say the word aloud, and then say whatever comes to their mind. After they read the stimulus word, the screen goes blank. The screen is blank for 10 seconds while they respond. Then the next stimulus word appears. This training procedure is repeated for 5 different words to accustom the subject to "think" out loud in front of a blank screen after reading something.

Following the 5 training words the subject saw seven lines of text from a story about automobile accidents and the value of seatbelts (Stearns, 20). Without exception they read the text aloud. When they read the last word of one section the experimenter pushed a button and exposed the next seven lines. This procedure continues through the story. At unpredictable places during the reading when the student finishes the last word in one frame the screen goes blank for 10 seconds. (We might categorize this as a novel type of cloze test—Rankin, 9.) Again without exception the subjects made some responses to the material they had just read. The responses were recorded and transcribed for analysis.

I started this project with the expectation that the content of the students' responses to the blank screen would give me some insight into the comprehension process. However, I found, not very surprisingly, that it was quite difficult to categorize this content in any way that was reliable and useful. There was, however, some other material in the protocol which looked quite promising. You will recall that in the training period the student had 10 seconds in which to give associations to a single stimulus word. I found that the number of words produced correlates very highly with the total score on the survey section of the Diagnostic Reading Test (Committee on Diagnostic Reading Tests—2). For 7 subjects the rank order correlation was .77 which is rather surprising considering the number of students. The correlation is significant at $p<.05$. The results suggested to me that covert verbal behavior is indeed related to comprehension, perhaps in the way suggested by previous studies. You will recall that they report that the more competent readers tended to produce something other than literal meanings or restatements of the stimulus. In my data I found that the better readers tended to give longer and "meaningful" associative chains. For example, to the stimulus "BLUE" the poorest reader produced the responses "sky, pretty, boy." The best reader, on the other hand, produced the response, "Blue is a color, the color of the sky, the color of lakes." We see then that the more able readers tend to say more, and to produce sentence fragments or chains, rather than single word associates.

Well, where do we stand with regard to our knowledge of comprehension in the adult reader? The studies reported suggest ways in which comprehension can be manipulated. We can work with overt behavior, using the technology of operant conditioning. One could pursue this approach by reinforcing amount and rate of verbal production to single stimulus words and eventually even to sentences or paragraphs treated as stimuli. I see no reason why shaping techniques could not be used to reinforce more verbal responses. Both Goldiamond (3) and Martin and Siegel (6) have shown that reward and punishment techniques can be used for the operant conditioning of verbal fluency. The same approach should apply to verbal quantity. It would be possible, I think, to reinforce complete sentences rather than sentence fragments if these can be judged while they are being emitted. I conceive of a situation in which the student is presented with material, instructed to speak out loud, and then receives some sort of reinforcement signal such as a green light when his production meets certain criteria that appear to be related to comprehension. I have in mind as a first step the latency of response and the number of responses. These could be shaped up rather easily using current techniques. In essence, I would train people to do what I think good readers are doing. I would submit that for the first time we are beginning to look at manipulable behavior other than test-taking that might be related to reading comprehension. I would emphasize the fact that this technologically oriented look at the reading process offers some possible leads for effective teaching of reading and of a better understanding of the reading process in terms of observable events.

Now let's look at comprehension as verbal behavior in a slightly different way. If talking to oneself is involved in comprehending, then this talking must take a certain amount of time. We know for example from Taylor's (22) research that the eye fixations during reading by an adult take about .25 of a second. No one as yet seems to have measured the duration of whatever covert speech response immediately follows that eye movement. However, it seems reasonable that the internal response must take some measurable amount of time greater than zero. Potentially, that time span could be measured. We might project words tachistoscopically with changes in the time span between presentations. If the comprehension response takes time, there will be a presentation speed which is less than that time, and produce poor comprehension. If we slowed down the visual input, there would be more time for comprehension. Below a certain slow rate, we would expect too much time for comprehension or self-talking and thus get the day dreaming often reported in word-by-word readers. Thus, on purely armchair basis, we might speculate that there is a band of visual input rate which would maximize comprehension. Above or below that input rate, comprehension deteriorates, or at least does not change.

This position gets some support from the findings relating questions in the text to comprehension scores over the material. Weaver and Kingston (25) have reviewed the literature covering the placement of questions in content reading. They draw heavily on the very careful research by Rothkopf (11-17). Their conclusion is that questions interspersed in the reading material can have either a teaching effect or a motivational effect. That is, certain types of questions can be demonstrated to teach the content of the material. Other types of questions have the effect of maintaining reading behavior over long periods of time. It is the class of questions which teach that are of particular interest here. Perhaps these questions teach *because* they have a facilitating effect on some aspect of comprehension. Perhaps questions interspersed in the text function because they allow time for self-talking, or "comprehension." Without these questions the student merely reads through the material with not quite enough time to comprehend it fully.

It was speculation of just this sort that led to a study manipulating time between paragraphs of reading material. We would hypothesize that increasing time between paragraphs would allow students a better chance to "comprehend" what they had just read.

In order to test this, I had 26 students each read two forms of somewhat similar material (Morley–7; Burnham–1). One article was printed in straight text fashion, paragraph after paragraph on a page. At the end of one page the student turned to the next. The other article was printed with one paragraph per page. This second condition allowed the student extra time for "comprehension" while he was turning the pages. The manipulation is admittedly a weak one.

and the paragraph size was not controlled in any way. Each article was printed in both the text and paragraph form. Each student read one article and took a 10-item post-test. Fifty-two hours later he read the second and took a posttest on it. The treatment conditions were completely counter-balanced to control for article and sequence effects. Subjects were assigned to treatments at random. The date, in which each subject served as his own control, was the score on the paragraph test minus the text test. The mean difference was .84 items out of ten in favor of the paragraph condition. The observed matched t of 1.75 had less than 5% probability of occurrence by chance. I think the results are promising enough to be worth further study with more homogeneous material and paragraph size.

As a side issue, I'd like to point out that the paragraph per page format is a close approximation to the situation that obtains in programmed instruction. The student reads a small bit of information, composes a response, checks that response, and then goes on to the next frame. Even in the situation where the student does not bother to check his response or does not even bother to compose a response overtly, there is a slight pause between small bits of information. Perhaps this pause is one of the variables that account for the results of programmed instruction.

CONCLUSION

This paper has an admittedly peripheralist point of view. That is, thinking and comprehending are treated as sub-vocal muscle responses. Thus, the total reading act involves some visual input, a sub-vocal response, and perhaps a fractional auditory response as well. It is the manipulation of the sub-vocal, and maybe auditory, responses that may lead to better comprehension. This view of reading, and thinking flows from the behaviorist tradition, most specifically J. B. Watson (24). In addition, the notion of the operant techniques is due to the work of Skinner and his followers. (See for example the volume edited by Honig—4.) Such techniques have been applied to a wide range of problems of interest to reading specialists (Raygor, Wark, and Warren—10; Wark 23).

The question remains: Does the position taken in this paper err in the direction of simple-mindedness? Perhaps yes. But it may be a palliative to the slippery complexity of "reading as a response of the total organism" and other such non-specific catchalls. It seems to me that reading instructors and researchers can be likened to explorers going into a terror incognito* They can push in from the periphery, carefully charting each step. Or they can drop into the middle of the jungle by parachute. That approach is more dramatic.

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* My secretary took it that way off the dictating machine. Frankly, I like her interpretation better than my input.

But it has a few problems. Assuming you can land and get your feet on the ground, you don't really know where you are. And you may get swallowed up by a rampaging hypothesis.

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A Readability Formula that Saves Time

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The purpose of this article is to present a revision of the Readability Graph together with directions for its use and to present some validity data which compare readability scores on several different formulas.

Readability formulas have been around for many years and a good deal has been written about them. For the reader who wants a more detailed overview of the topic, books by Klare (9), Chall (2), and Dale (3) are recommended. Yet the topic seems to hold fresh interest for each semester's load of graduate students and some serious researchers. Though readability formulas are used by some teachers, some librarians, and some publishers, their number is all too few. Perhaps the sheer time consumption and difficulty are factors which cause the formulas mostly to languish in term papers and occasional magazine articles.

The Readability Graph was first developed when I was in Uganda where simplicity was a prime prerequisite. The original version appeared in print that was read mostly by British readers (6)& (7) and hence it is not too well known in the United States. Perhaps the fact that it was originally geared partly to an African set of readers has caused it to be accepted more by the emerging nations.

The Readability Graph in this article is aimed at the United States educational scene. The grade level designations are for America; the simplicity is a need I find universal. As much as I admire the many works of Edgar Dale and Jean Chall, I confess that I did find their readability formula loaded with fussy rules, a tedious vocabulary, and decimal figures carried to the fourth place, a bit overly precise, when it only yields some score such as "9-10 grade." (4)

Perhaps simplicity may best be measured in printed pages. The Dale-Chall formula takes about 18 printed pages while the Readability Graph takes only about one and a half. The SRA formula is relatively simple, but it requires a plastic gadget costing several dollars and has only four difficulty designations.

Directions for Using the Readability Graph.

1. Select 3 one-hundred-word passages from near the beginning, middle, and end of the book. Skip all proper nouns.

2. Count the total number of sentences in each hundred word passage (estimating to nearest tenth of a sentence). Average these three numbers (add together and divide by three).

3. Count the total number of syllables in each hundred word sample. There is a syllable for each vowel sound, for example: Cat (one), blackbird (two), continental (four). Don't be fooled by word size, for example: polio (three), through (one). Endings such as -y, -ed, -el, or -le usually make a syllable, for example: ready (two), stopped (two), bottle (two). I find it convenient to count every syllable over one in each word and add 100. Average the total number of syllables for the three samples.

4. Plot on the graph the average number of sentences per hundred words and the average number of syllables per hundred words. Most plot points fall near the heavy curved line. Perpendicular lines mark off approximate grade level areas.

Example

	Sentences per 100 words	Syllables per 100 words
100-word sample page 5	9.1	122
100-word sample page 89	8.5	140
100-word sample page 160	[illegible]	129
Divide total by 3	3) 24.6	3) 391
Average	8.2	130

Plotting these averages on the graph we find they fall in the 5th-grade area, hence the book is about 5th-grade difficulty level. If great variability is encountered either in sentence depth or in the syllable count for the 3 selections then randomly select several more passages and average them in before plotting.

How Accurate is the Score? If you want a nice simple answer on accuracy, I'll shoot from the hip and say "probably within a grade level." If you want a more technical answer, read on.

The problem of validity is difficult. First of all there are no rigorous standards of just what is 4th-grade difficulty as opposed to 5th-grade difficulty. There seems to be some loose sort of agreement between publishers and educators which is kind of based on experience and perhaps a little on test data as to what grade level designations mean. But anybody who has used an old reading test, say the 1957 California Reading Test, on his class, then used the 1965 Stanford Reading Test on exactly the same class at nearly the same time can tell you that the class mean reading score expressed in grade level is quite different. In general, newer tests are more difficult or in other words a 9th-grade student today reads better than a 9th-grade student in former years.

The Dale-Chall is partly validated on teacher and librarian judgments of material difficulty and partly by correlation with other formulas.[2]

Hence, the problem of validity is complicated by trying to determine grade level when grade level won't stand still and when subjective "judgments" are about as good a standard as can be found. There is a partial way out of this dilemma, however, and that is by using relative ranking. For example, if the formula continually ranks a number of reading passages in the same order as say a comprehension test taken on the same passages by one group of students. Or you can compare one formula with another by rank order correlations. This will answer such problems as: "Does the formula consistently rank some books hard and others easy?"

I am reasonably satisfied that my formula ranks books on a hard-to-easy continuum about as well as Dale-Chall and Flesch and SRA formulas. (See Tables 1 & 2.) It also seems to give about the same grade level designations. (See Table 3.) The Dale-Chall ranks several books a little harder than the Readability Graph but perhaps the fact that it was developed about 20 years ago accounts for this. At least it is hopeful to think that present 6th and 9th-graders can read a little better.

For those interested in how I obtained my grade level designations (I always wondered how others did it): I simply plotted lots of books which publishers said were 3rd-grade readers, 5th-grade readers, etc. I then looked for clusters and "smoothed the curve." After some use and correlational studies the grade level areas were adjusted. The grade level areas didn't come out too even, but that is part of the trouble with working with real data. The fact that there is much less graph space for Grades 4 and 5 than for Grades 6 and 7 is interesting. It may be an inaccuracy in our data or it may mean that 4th and 5th-grade materials don't change in difficulty as much as 6th and 7th-grade materials and/or students reading abilities. In any event, other formulas such as Dale-Chall and SRA don't attempt to differentiate between just one grade. (Dale-Chall gives two grade designations such as 5-6 or 7-8 and SRA gives even bigger chunks.)

The data in Tables 1, 2, and 3 was obtained from the master's thesis of Andrew Kistulentz who was one of my advisees at Rutgers University Graduate School of Education.[8] The ten books were used in his 10th-grade English classes and he constructed comprehension tests composed of 3 parts: true-false, multiple choice, and short paragraph essay. He then did rank order correlations between the readability formulas and the comprehension tests. Most of the formulas correlated quite highly among themselves and with the comprehension tests.

The Dale-Chall formula correlated quite highly with the Readability Graph (.94). The high correlation with the Flesch formula (.96) was expected as the inputs are basically the same only instead of mathematical computations the Graph has plotting to yield levels

.5. The SRA formula also has the same inputs of syllables and sentence length, but uses a plastic wheel for an analogue (slide rule type) device to compute level (correlation .98) that yields four gross levels only.[12] The Graph yields 13 grade levels. My only explanation as to why the Botel formula did not correlate better (.78) with anything else is that it takes into account only vocabulary difficulty and completely ignores structure complexity (as is usually reflected in sentence length).

On a lower level the Readability Graph has been compared with the Spache formula in a study done by Martin Kling and Clement Haimowitz for the Boy Scouts of America. (10) & (11) They concluded that "There was a very close agreement between the readability level according to both formulas. . . . It is probably more efficient to use the Fry Readability Formula at the primary grade level." (10)

Conclusion. Readability formulas have had a wide-spread, long-term interest among professionals in the reading business. However, the lack of their use in broader educational circles may be due to excessive working time and difficulty in computing some existing formulas. The Readability Graph is presented as a faster and simpler method of determining readability. It correlates highly with the Dale-Chall, SRA, Flesch, and Spache formulas. My only hope now is that it be widely used by teachers, librarians and publishers as one important and objective method of determining readability.

Note: The Readability Graph is not copyrighted. Anyone may reproduce it in any quantity but the author and the editor would be pleased if this source were cited.

TABLE 1

RELATIVE RANKINGS OF TEN BOOKS BY READABILITY METHODS AND STUDENT COMPREHENSION SCORES

	Ranking Method					
Book Title	**Fry**	**SRA**	**Botel**	**Dale-Chall**	**Flesch**	**Stud. Comp.**
Light in Forest	2.5	2.5	1.0	1.5	2.5	1.5
Mice and Men	2.5	2.5	7.0	3.5	2.5	1.5
The Pearl	2.5	2.5	2.5	1.5	2.5	3.0
Shane	2.5	2.5	2.5	3.5	2.5	4.0
Death Be Not Proud	6.5	7.0	7.0	6.0	6.0	5.0
Moon Is Down	5.0	5.5	4.5	6.0	6.0	6.0
To Kill a Mockingbird	6.5	5.5	4.5	6.0	6.0	7.0
Tale of Two Cities	8.0	9.0	9.0	10.0	9.0	8.0
Silas Marner	9.5	9.0	10.0	8.5	8.0	9.0
Act One	9.5	9.0	7.0	8.5	10.0	10.0

TABLE 2
INTERCORRELATIONS OF FIVE READABILITY METHODS[1] RATINGS AND STUDENT COMPREHENSION OF TEN BOOKS

Readability Method	Fry	SRA	Botel	Dale-Chall	Flesch	Student Comp.
FRY	——	.98	78	.94	.96	.93
SRA	.98	——	.81	.95	.98	.90
Botel	.78	,81	——	.82	.73	.64
Dale	.94	.95	.82	——	.95	.90
Flesch	.96	.98	.73	.95	——	.94
Student Comp.	.93	.90	.64	.90	.94	——

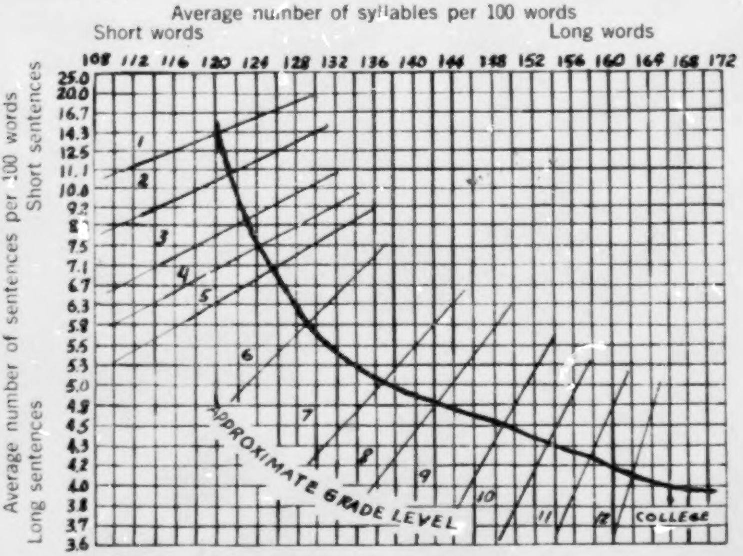
[1] A correlation of .5 is significant at the .05 level and .75 is significant at the .01 level.

TABLE 3
MEAN GRADE PLACEMENTS AND MEAN STUDENT COMPREHENSION SCORES ON TEN BOOKS

	Mean Comprehension Scores and Mean Grade Placements By Method					
Book Title	Fry	SRA	Botel	Dale-Chall	Flesch	Comp.
Light in Forest	5	5	4	5	6	92
Mice and Men	5	5	8	6	6	92
The Pearl	5	5	5	5	6	90
Shane	5	5	5	6	6	89
Death Be Not Proud	7	7	8	7	8	88
Moon Is Down	6	6	7	7	8	87
To Kill a Mockingbird	7	6	7	7	8	86
Tale of Two Cities	9	10	9	11	11	82
Silas Marner	10	10	10	10	10	79
Act One	10	10	8	10	12	75

Graph for Estimating Readability

By Edward Fry, Rutgers University Reading Center



DIRECTIONS: Randomly select 3 one hundred word passages from a book or an article. Plot average number of syllables and average number of words per sentence on graph to determine area of readability level. Choose more passages per book if greater variability is observed.

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1967 Review of Research in College-Adult Reading

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The research reports treated in this year's review are, for the most part, those which have appeared in the periodical literature of the past year, through September of 1967. A number of reports which were not available at the time last year's review (5) was being prepared has been included, as have also several which had been overlooked previously.

In line with the policy established early in the presentation of these annual reviews, the reports included have been restricted, in general, to those which involve or have direct pertinence to reading relative to college and other adult groups. Treatment of the various included items has been organized under the following broad areas: Programs; Reading and Study Habits, Traits and Skills; Influence of Reading and Study Habits and Skills; Factors Influencing Reading and Other Study Habits and Skills; and Miscellaneous (Tests, Newspapers, Readability, and Other Areas).

PROGRAMS

A considerable number of reports found pertinent for purposes of this year's review dealt with specific reading programs at the college or other adult levels. (1;3;4;7;10;12;19;20;21;22;23;27;29;30;31;34;35;41;47;51;58;63;65;70;71;78;81;82;84;96;97;100;101;108;116;117;119;122;123) In several included reports, description of a specific reading program was the main intent; and results obtained or evaluations made were referred or alluded to only rather indirectly. (E.g., 20;65;123)

A number of descriptions and reports of evaluations of specific programs was presented (23;35;70;78;122). Glass (35) reported that average reading rate, as determined by informal rate measures, "more than doubled" for 12 University of Syracuse students and that flexibility (difference between lowest and highest rates) increased a little less than 300 per cent. Reading test score gains were positive but not significant; and reactions received with unsigned questionnaires were somewhat varied and indefinite. Wedeen (122) found that Brooklyn College subjects in a six-weeks program gained significantly in both reading and writing skill areas. Duncan and Foster (23) reported that a group of British soldiers improved significantly, over a control group, in reading skills after a 20-lesson course with the Craig Reader, with no significant change in comprehension scores for either group. The experimental group made significantly greater comprehension test scores two weeks after the course. The investigators commented on earlier findings by McLaughlin (70) of no gains in comprehension with a group in a Craig Reader Program. McLaughlin (71) pointed out that his study was concerned with unaided recall rather than responses to test questions with reminders of passage content; and he stated that he would be delighted to be shown that unaided recall, which is required in most real-life situations, could be improved by any reading course.

Several reports were concerned with a specific or a unique method. (10;21;78;82;97;119) Brown (10) indicated gains in vocabulary test scores resulted after a formula for vocabulary improvement (CPD formula) was used with adult classes and college groups. Neidt (78) found that University of Colorado study skills students achieved higher grade-point averages during a three-term experiment with video-taped instructional television than did other students, and that significant changes in study skills inventory scores occurred, time of day of the course was not too important, and credit was not a necessary condition for successful experiences. Wark, Raygor, and Summers (119) reported that appreciable rate gains were made by various groups of enrollees in a 12-lesson how-to-study correspondence course, including enrollees who had completed only a portion of the lessons and even those who had dropped out at varying stages, leading the investigators to question the purpose of an instructor's presence and to suggest "social inter-action" as a possibility. Portman (82) considered results obtained in a three-weeks reading course for labor leaders, in which students were assigned to the course regardless of proficiency or interest, to be "embarrassingly good," with "average percentage gain" in rate of approximately 120 per cent and very little comprehension gain.

Two precollege programs were found reported (21;97). A televised speed reading program (involving controlled reader materials) resulted in reported definite gains and definitely favorable reactions on the parts of students and proctoring teachers (21). Schrader (97) concluded, as a result of his descriptive study of a University of Maryland pre-college summer program, that all pre-college students should be required to participate in the reading and study skills program and that problem-solving counseling sessions had little influence on the reading and study skills improvement attained.

The effect of participation in reading improvement programs on grades or academic achievement was one of the focal points for several other investigators also. (29;30;31;41;66;78) Foxe (29;66) found no significant effects on chemistry grades or grade-point averages of chemistry students after participation in a short-term traditional reading and study skills program. Maxwell (66) discussed a program to supplement a statistics course in which significantly more of the students in the class had earned "A's" than had been found in previous groups, over-all final examination performance was higher, and the instructor was able to cover more concepts in class than had been done before. Freer (30) found significantly higher one-year grade-point averages for a group of junior college students who had participated in a developmental reading program than for a matched control group. She did not find a significantly different portion of males over females taking the course. Hafner (41) found that positive gains in grade-point averages made by Southern Illinois University students the first quarter after participating in a reading program were not statistically significant; but a significantly larger number of skills program students than of control students, obtained a grade-point average of above "C."

A number of investigators were concerned mainly or in part with a comparison of methods of increasing reading efficiency. (3;4;12;19; 22;34;51;63;96;101;116) Berger (3;4) found that four methods (tachistoscope, controlled pacing, controlled reader, and paperback scanning) all produced significant gains in reading rates of Syracuse University students participating in a six-weeks program, with the paperback scanning method producing results significantly superior to those of the other three. No significant changes in average level of comprehension were found. Reading flexibility increased significantly but not significantly differently, with three of the methods, but not with the tachistoscope. Burmaster and Lawson (12) found that a lower group, in terms of learning abilities, profited most significantly from programmed instruction, compared with conventional methods in a genetics course, and a middle group profited significantly more than the most able group. Daniels (19), studying the relative effects on underachieving entering freshmen of individual counseling, group counseling, and a study skills and habits course, found no significant differences in grade-point-average among three groups and a control group, or in study habits and attitudes, although he concluded that the formal structure of the study skills and habits course might have a greater appeal to underachieving students than might the other conditions. Duffy (22) found significantly reduced mean gains in two reading comprehension scores and in an English score for groups which had had twenty-five ten-minute sessions of paced reading inserted into freshman English courses. A significantly greater mean loss in comprehension was experienced the following semester by the control clinic group (which had mostly paced reading) than by the other experimental clinic group (which utilized self-instruction through programmed materials). Duffy concluded that use of any appreciable amount of freshman English class time for paced reading was not justified, that a program consisting of little more than paced reading for all participants is detrimental to students with weak basic skills, and that many college students will pursue self-teaching if given the opportunity. Gerber (34) found that students in a traditional orientation program, in which study skills, choice of major, and study of college rules and regulations were emphasized, did better on tests of rules and regulations than did experimental groups who had modified or no orientation classes; but no significant differences were found among the groups with regard to grade-point-averages. Student opinion was found to be definitely against the idea of orientation classes, but apparently to the methods rather than to the objective. Hooprich, Anderson, and Steinemann (51;101) evaluated the relative effectiveness of several reading training methods differing in number or type of training devices and time of training. They found significant increases in speed (but not level) of comprehension for three of four training groups but no significant differences in amount of speed of comprehension gain which could be attributable to use of reading machines or scheduled time for training sessions. They found a significant increase in reading speed and decrease in reading comprehension with a change in post-test orientation emphasizing speed. When Liddle (60) compared an experimental group which had received thirty-two hours of instruction with the Wood Reading Dynamics Method with a control group on performance on pre- and post-tests on fiction and non-fiction selections, he found the experimental group had significantly greater rate gains, to "substantiate the Wood claims for rate"; but he did not find substantiation for claims that rate gains were obtained without comprehension losses, finding significant losses in some of the comprehension scores.

Studying the effects of remediation and counseling on a group of non-admissible applicants to a Massachusetts community college who were guaranteed admission upon condition of regular attendance at summer remedial reading, English, and mathematics classes and counseling sessions, Shea (96) found no significant differences between pretest and post-test scores which could be attributed to counseling sessions or significant increases in any of the subtest scores of one reading test; but he did find significant increases in group intelligence test scores, aptitude test verbal scores, and scores obtained with another reading test. Counseled participating subjects were not found to differ significantly from non-counseled subjects in grade-point-averages at the end of one semester of college. Veale (116) found no significant differences in various reading test results between college remedial groups who had been taught with a direct teaching approach and a group taught with an individualized approach.

Improvement in grades or in academic achievement was the criterion, or one of the criteria, of effectiveness of programs involved in several other investigations also. (29;30;41;66;78) Significant improvement was found in some (30;41;66;78); no significant effects on grades or grade-point-averages was reported by others (29;66).

Several reports were concerned with adult literacy training programs. Brazziel (7) found that as a result of a retraining project with unskilled adult men, carried on for a year and sponsored by government research grants, the gain in average reading ability for the group was "about three years" and that the subjects "gained the reading habit." An average gain of 1.3 years (Gray Oral Reading Test) was shown by a group of functional illiterates with whom experimental teaching and testing was carried on by Tuskegee Institute. (81) The older group (over 40 years), which met three times a week, showed an average increase of 1.5 years; the younger group, which met twice a week, 0.7 years. There were indications that a small competitive cash incentive played a role in causing the difference. Stanton (100) found that none of three experimental systems for teaching adults with less than eighth-grade reading level to read (auditory-visual, linguistic, and control) was significantly more effective than the control system. The only significant differences in measured reading skill areas found were with regard to rate scores of the linguistic system group over the auditory-visual system group and in the case of rate improvement of the group below the mean age of 37.8 over the above mean-age group. While the standards or criteria for "literate" and the methods of determining or testing for such were not indicated, Kasdon and Kasdon (58) reported that in a program of literacy training carried on in Mexico City to teach reading and writing in Spanish through the medium of television instruction, 62.5 per cent of the first experimental group of 1,200 completed the course and two-thirds of these were awarded special literacy certificates. Twenty-seven percent of the second experimental group completed the course and 85 percent of these were considered literate at the end.

Among articles containing reports of programs and results but in which the intent of reporting was other than that (e.g. 1;27;31;84) was one by Allen (1). The experimental group in a program for teaching English as a second dialect was found to have made greater gains in reading *(Cooperative English Test)* after a year of grammar practice than did a control group, although the latter group had given more attention to reading as such and to discussions of material read.

Permanency or retention of gains was included as a criteria for consideration in several studies (3;4;23;30;82;122), with the period of retention studied varying from two weeks (23) to two years (122). Maintenance or retention of gains was reported by all, although in varying degrees. In one study (82), retention of gains was checked by sending exercises to participants two months after completion of a program and having them test themselves.

Hollingsworth reported that a group of industrial executives who had completed a listening improvement program showed significant improvement (an average of 50 percent) on listening test scores. Tegeler (108) found no significant increases in spelling test scores of three groups of university students who scored below average on placement examination spelling tests and who had been taught by auditory, visual, or a combination of methods. Warga (117), in a study of the time when college students feel the most need for help in subjects, recommended that a study skills course should be voluntary, should be general at the start and progress to dealing with specific methods for particular problems as they arise (with students grouped accordingly), and at the end of a term should deal with a general group with a common need but with different problems pertinent to particular courses.

READING AND STUDY HABITS, TRAITS, AND SKILLS

Several studies in the general area of reading and study habits, traits, and skills yielded implications for the reading of newspapers and magazines. (2;102;106;113) Atkin's findings (2) in a study of effectiveness of news media in reaching college student markets, in which *Time* and Michigan State University's newspaper, *State News*, were compared, led him to conclude that the college newspaper was the most efficient medium for national advertising to reach student markets and that, while student attitude was somewhat higher toward popular magazines, the penetration of college newspapers was much greater at all levels. Among factors interpreted by Stempel (102) as emerging from a factor analysis of interview responses of adults to determine categories of interest shown in newspaper headlines were national politics, immediate reward, economic activity, public health and welfare, conflict-suspense, and leisure-activity. Tebbel (106) referred to "market research statistics" which indicated that 71 per cent of college students read *Reader's Digest* "either regularly or occasionally," more than read either *Playboy* or *Time* "regularly or occasionally," with only *Life* topping *Digest* in this combination category. In the "read regularly" category, *Life* was also first, followed by *Playboy*, *Time*, and *Digest*.

In a study carried out by forty-seven newspapers and described by Tobin (113), 425 adults, all of whom had had some college and were between the ages of 21 and 30, chose definitions for ten words common in World War II, when most of the adults were young children. Results obtained led Tobin to question just how much the average reader of a newspaper really understands. Among the terms recognized correctly by over 90 per cent of both men and women were "GI," "concentration camp," and "blackout." Identified correctly by less than 90 per cent of either or both men and women were "blitz" (identified as a German professor by some), "gobbledygook" (identified by some as a fast eater and by some others as a Korean turkey), "Munich," "Dunkirk," "Stuka," and "Snafu" (identified by some as a town in India and by some others as a Chinese politician).

Several studies were concerned with correspondence course enrollments. Hartsell (43) found that among major reasons for enrollment in correspondence courses were college credit, self improvement, and satisfaction of graduation requirements, with main given causes for disinterest (no further contact after initial enrollment) including insufficient time for study, increased work and business demands, difficulty and length of assignments, and completion of course in residence. In a later study, Hartsell and Farrar (44) concluded, on the basis of a sample of University of Tennessee correspondence course students, that the typical home study student "is a 28-year-old male, non-resident, out-of-state student looking for a degree and interested in a wide variety of credit courses on which he spends an average of 40 weeks." (44:31) Among findings obtained by Scotton and Wecke (94), in their study of summer and non-summer correspondence course enrollments at the University of Illinois, were that relatively more college students enroll in summer than during the year and than teachers and other groups; that fewer elementary and secondary teachers enroll during summer than during the school year; that the majority of non-summer enrollees are other than teachers and college students; that summer students do not select courses with fewer lessons to complete than do non-summer students, although the former are more inclined to cancel courses; and that the grade-point-averages for summer and non-summer students are similar, as are the ratios of course completions, although summer students tend to complete courses in less time.

Another group of studies had pertinence for the reading and study habits of teachers. (6;37;38;64;111;114) The associate editor of the *NEA Journal* reported results obtained in his questionnaire study (37,38) of reading and recreational interests of public school teachers from Kindergarten through Grade Fourteen. Among findings obtained concerning "typical public-school teachers" were that they read regularly one daily and one weekly newspaper, including at least one published non-locally; read national news stories most regularly and next, in order, local news, education news, international news and editorials; read Drew Pearson and Walter Lippmann among national-international affairs columnists and Ann Landers among specialized columnists most frequently; read *Readers Digest* and *Life* most regularly among popular magazines; preferred fiction to non-fiction in popular magazines but the reverse in popular books; read four popular books "the last three months"; were not members of a book club; regarded *The Instructor* as the most helpful professional periodical, followed closely by *NEA Journal* and *Grade Teacher;* usually read *NEA Journal, NEA Reporter,* their state association journal, and a professional subject matter journal; and had read four professional books "during the last three months." Among findings obtained in a study of readership habits and interests of a sample of teachers in the public schools of a Texas city were that teachers had a preference for reading, in order, novels, current events, and history; that the job of teaching itself was felt by a majority to be a hindrance to reading; that approximately one-third belonged to book clubs; that almost half indicated having read a book a month for the past six months and had spent at least two hours reading books the week preceding; that a majority spent more than two hours a week reading magazines and more than three hours reading newspapers, received from five to eight magazines, and sucscribec to one or more newspapers.

MacLeod (64), comparing male special area graduates (art, business, music, industrial, and physical education) who persisted in teaching with those who did not five years after graduation, found special area graduates tended to be lower than the average teacher education student on various psychometric and academic variables (which included *Cooperative English Test* scores) but no significant differences between persists and non-persists either across or within areas. Students in the specific special area of physical education were generally found to be lowest on a number of variables (including English and reading test scores). Thornburg (111) found that the typical student teacher in five Alabama educational institutions had limited cultural, travel, and social experiences and spent most of her leisure time in attending sports events, conversation, and reading. However, he concluded that college provision of varied reading materials and cultural activities did not insure students' making use of the material or taking advantage of the activities. Tunmer and Apter (114) reported that vocabulary, comprehension, and language usage test scores obtained on second-year students at a South African teachers training college "confirmed doubts about the quality of English-speaking recruits in the South African teaching profession."

Several reports were concerned with the problem of adult literacy or relative illiteracy. Olsen (79) pointed out that with varying concepts or definitions of "literacy," disagreement is found among estimates of the number of illiterates in the U.S.; e.g., the United States Office of Education estimates eleven million while "other sources" estimate forty million. Olsen reported that twenty-three million adults do not have grammar school education, fifty-five million do not have high school education, one out of five high school graduates is unable to perform sufficiently to pass academic qualifying tests for armed services, and that one of every twelve U.S. citizens (or over eight million) falls in the category of "functional illiterate" (less than five years of schooling). Among findings and conclusions in a study of trends in world illiteracy since 1900 reported by Sothi (98), were that world illiteracy has dropped from 51 per cent at the beginning of this century to 34.5 per cent at the middle of this century, that the proportion for the female population is generally higher than for males, and that illiteracy and agriculturism declines are closely related. Hunsaker (54) reported that since the 1920's, when the new alphabet was accepted and introduced in Turkey, illiteracy in that population has decreased from about 93 per cent to 60 per cent in 1960; but, while there was a decrease over a forty year period, illiteracy actually increased slightly from 1955 through 1960 because the Turkish education system was unable to keep pace with the increase in population. According to 1960 census figures, only approximately 19 per cent of the population had completed five or more years of education.

Crabtree (17), in a treatment of characteristics of persons in a Job Corps program, pointed out that 58 per cent had reading achievement levels below sixth grade. Brown (8) gave a preliminary report at this conference in 1965 of a study of adult Negro illiterates in the city core area of Buffalo, New York. Among trends or findings noted were that almost all subjects were of rural background; slightly less than half of the subjects tested reported having no one in the present family who could read; reasons given for wanting to learn to read were highly utilitarian; among indicated areas of possible reader interest were vocational improvement, personal appearance, religion, health, and history; and subjects were found not to be aggressive either in personal relations or in pursuing achievement. Sussman (104) reported that when minimum age requirements for eligibility of high school non-graduates to take the *High School Equivalency Diploma Test* were lowered from 21 to 18 years in New York State, over 2,700 applications were received, more than double the number which had been received the previous summer. During 1963 only about 60 per cent of 10,000 New York City applicants had passed the tests.

Among another group of studies involving college student groups was Condon's experimental study (16) of community college students' desires and perceptions concerning study space and facilities. He found that students generally studied at home and that technically they did not use library resources and did not regard the library as a particularly desirable study location. A number of ideal environmental condition desires were expressed by the students. Another group of investigators (40) derived a list of 25 most frequently used words for both oral and written messages by analyzing five-hundred-word samples of speeches and essays of University of Nebraska and Butler University students in beginning public speaking courses. When oral and written lists were compared, 19 words were found to be common to both lists, with slight differences in frequency of occurence; a conspicuous absence of nouns and no descriptive words or adjectives were found in both lists; the oral lists developed were found to be similar to the lists developed by other investigators; and more different words were used in written samples than in spoken samples of the same subjects. In another study (53), elementary psychology students either listened to or read a passage and then were asked to reproduce either by speaking or writing. It was found that thoughts reproduced through speaking and that listeners, whether reproducing through speaking or writing, tend to be wordier, more repetitive, and looser than thoughts reproduced through writing and than readers, respectively. Listeners were found to be more accurate in terms of fewer omissions but more prone to distortion of the material reproduced.

Other characteristics of students participating in reading and/or study skills programs received attention in some investigations. Students in an Indiana university reading and study skills course tended to be in the lower fifth of freshmen in terms of verbal aptitude scores; were weakest in vocabulary as reflected by test scores; regarded rate as a major problem, although test scores indicated it to be a minor one, relatively; and had higher correlations of paragraph comprehension, than of rate, test scores with aptitude scores and with reading test scores. It was concluded that "speed reading has little meaning when other basic reading skills are not considered simultaneously." (55:183) Russell (90), studying a group of University of Houston freshmen who were enrolled in a reading course, found differences in the per cent ranking above the mean on verbal, mathematics, and total *Scholastic Aptitude Tests* scores and ranking in the top quarter of the high school class, with differences favoring the entering freshmen total group.

In a Roper survey of public attitudes toward television and other media, the fifth in a series since 1959, 53 per cent responding said they would most like to keep television, as compared to 42 per cent in 1959; the figure for newspapers had declined from 32 per cent to 26 per cent, radio from 19 per cent to 14 per cent, and magazines from 4 to 3 per cent. Upper educational and economic levels were less oriented toward, but not indifferent toward (and growing in support for), television. With regard to sources for news, 5 per cent preferred newspapers in 1959 as against 51 per cent, 34 per cent, and 8 per cent, respectively, for television, radio, and magazines. In 1967 television led newspapers 64 to 55 per cent, with 28 per cent and 7 per cent for radio and magazines, respectively.

Some of the findings of a questionnaire survey of libraries in 82 academic institutions might have some implications relative to college students' reading and study habits. (95) Slightly less than half of the 73 respondents reported using, or planning to use soon, turnstyles. Fifty-eight respondents reported checking students' books; but 10 did not check purses. A "good deal of interest" was also noted in a specific commercially available alarm system.

INFLUENCE OF READING AND STUDY HABITS AND SKILLS

As in previous years, a number of prediction and other correlation studies yielded implications concerning influence of reading and study habits and skills. Reading and study habits scores were found to be predictors of academic success in some studies (11;56;57;75;92) but not in others (9;11;28;83). Karp (57) found predictive value with seven selected independent variables but he found nearly as much predictive value with the top three variables (which included reading test scores). In another study (75), part and total scores of the California Reading Test showed, for the most part, statistically significant predictive validity for selected achievement measures of students in nursing training. ACT English scores, along with SAT verbal scores, were found by Sassenrath and Pugh (92) to make the largest contribution to variance of grade-point-averages. Brown (11) found ITED scores obtained in eleventh grade, and ACT scores obtained in twelfth grade, to be about equally efficient as predictors of college grade-point-averages. However, DRT scores were found to correlate only slightly with other sub-tests and with grade point averages, with prediction contributions not significant. Prien and Botwin (83) also found reading test scores did not materially increase predictability of achievement. *Brown-Holtzman Survey of Study Habits and Attitudes* scores were not found to aid in prediction of college freshmen achievement in two studies (9;28). SSHA scores, however, were found to be correlated significantly with grade-point-average by Foxe (29), as were also listening comprehension scores.

Positive correlations between academic achievement and reading test study habits scores were reported in several other studies. (29;33;46;68) Gadzella and Bentall (33), studying two groups of high school graduates, found greater significant differences between English and reading test mean scores than on any other characteristics studied. Hale (46), studying groups of University of Texas students in terms of graduates, voluntary withdraws, and forced withdraws, found significant differences among males, favoring graduates, on English and reading comprehension test scores, but not among females. Reading test scores were found to be significantly related to achievement test scores obtained to assess progress of entrants in nine Oklahoma schools of practical nursing. Stoudt (103) found no significant relationship between study skills scores (as measured by the *Spitzer Study Skills Test*) and academic achievement of over three-hundred Florida State University freshmen in courses in history, religion, German, and mathematics. In another study (50), no statistically significant correlations were found between two reading test scores and trainee's composite scores based on performance and written tests administered in an electronics course for Navy personnel.

Coffman and Neun (14) reported that mean post-test SAT verbal scores increased slightly for groups which had had an eight-weeks accelerated reading course but decreased significantly for a group which had a fifteen-weeks program. Significant increases in WAIS IQ's were shown by most students (functional illiterates) in an experimental teaching and testing program carried out by Tuskegee Institute. (18) A majority of both those who passed and those who failed in a University of Maryland precollege summer program felt that weak reading and study skills would be among the major reasons for leaving the University. (97) Menefee and Menefee (73) found after distributing Indian versions of a country weekly (a mimeographed newsletter) in a region of agricultural villages in India that definite information gains resulted with regard to local, national, and world news. While women started much lower than men, their scores increased almost as sharply. Increase in radio listening was also reported.

According to the editors of *Personnel Journal*, the question of whether applicants can read does not come up during typical office job interviews any more because it is a "skill so basic it's taken for granted." (115:457) They added that soon typing skill will be regarded in the same manner and questions with regard to this will also disappear from questionnaires. They predicted that by the 1970's some form of typing instruction will have been received by all high school students. They did not make a report of research but referred to studies, in which three universities participated, made by Litton's Royal Typewriter Division.

FACTORS INFLUENCING READING AND OTHER STUDY SKILLS AND HABITS

Several reports concerned influences on use of mass media. Buss (13) conducted telephone and personal interviews with Texas housewives to study factors motivating information seeking behavior. He found a small though significant correlation between curiosity and willingness to attend movies and to use radio and television but a slightly negative correlation between curiosity and willingness to use print media. A greater willingness to use print media and a great reluctance to use other media as age increased were found. Greenberg (39), in a telephone survey study of media and credibility, found that the single group which placed maximum reliance on the newspaper, rather than television, as a news source and for credibility were older men with some college training. The less educated subjects were found to be more likely to believe the television, rather than the newspaper, version of a news story; but a substantial majority at all educational levels was found to believe television over newspapers. A high level relationship between educational level and mass media usage, especially printed media, for obtaining world affairs information was found by Robinson. (88)

The role of personality factors in reading and study behavior or in effecting changes in such behavior was a concern in a number of investigations, as were also other factors effecting such changes of behavior. (18;27;31;42;45;59;69;77;80;84;89;91;97;116;120;121) Fennimore (27) found that students participating in a Washington State University program changed significantly with regard to all of a number of variables, including self-concept variables, except on self-appraisal. She found no pattern of relationship between initial self-appraisal and tested reading achievement. Although each of several sets of comparison groups gained significantly in each area of tested reading achievement, but not significantly over one another, a trend which favored the group with initial lower self-concept was noted. Fretz and Schmidt (31) found improvers in an educational skills course at Ohio State University showed significant preference for a judging attitude (coming to conclusions) in contrast to a perceptive one (becoming aware), when compared to non-improvers in the course. In both experimental and control groups, non-improvers showed significantly higher "feeling" and significantly lower "social desirability" scores than did improvers. Harrison (42) found that students in a study skills course who expressed a greater degree of stress were found to have higher expectancy levels than those who expressed a low degree of stress, with indications that low expectors improved the least and high expectors the most. No significant differences in WAIS Verbal and Performance IQ's of college remedial students were found by Veale (116); but distinctive patterns in WAIS profiles were noted.

Personality factors were studied in several investigations of reading performance and change also. (45;59;80;77) Hasler and Clark (45) found personality and self-concept attributes of "blame-avoidance," "inhibition," "introversion," and "lesser need for personal contacts at work," as measured by *16 PF Tests* and *Activity Vector Analyses*, to be significantly associated with proofreading ability of male junior college students who proofread a 4,600-word non-fiction magazine article within which 184 letter-substitution errors had been placed. On the basis of analysis of data obtained by having upper class college students rate the protagonist in a reading selection on a list of 17 bi-polar adjectives commonly used in semantic differential research, Kingston and White (59) concluded that semantic meaning of the character is significantly influenced by self-concept and personality variables relative to the raters. Paivio and Steeves (80) found significant correlations between personal values of university students and imagery scores (or image evoking capacity for words) in religious, economic, aesthetic, and religious areas and significant correlations involving "meaningfulness" of words for religious, political, and aesthetic areas. Moss (77) found no significant differences in number of abnormal MMPI scores between good and poor readers ,(lowest and highest 10 per cent on DRT comprehension scores) or between achievers and non-achievers in a group of University of Florida freshmen. She did find some abnormal scores to be associated with reading and achievement, leading her to conclude that personality variables were associated with reading ability and/or college achievement.

The role of variables other than personality ones was also studied by a number of investigators. (18;69;84;89;91;120;121) Darrell and Martin (84) found no significant differences between mean test score gains of college reading improvement program participants who scored below the median and those who fell above the median in initial performance. McDonald (69), in a "modest experiment" carried on to study voluntary change of rate to suit purpose, found when students were asked to read non-fiction "as fast as you can" they read almost twice as fast when told there would be no questions as when told they would be asked questions about the material read. (McDonald cited this study to illustrate the difference between statistically significant and educationally important behavior.) Samuels (91) found college students reading paragraphs containing words with high associative relationships with significantly higher speed and comprehension than they did paragraphs with low associative relationships.

Weaver and Bickley (120), using a modification of a "blackout technique" in studying effects of information acquired prior to reading and from the reading itself, found some test items over material read could be answered as well without reading a relevant paragraph as when the paragraph was read. In another study of predictability of materials (121), the same investigators, using cloze procedures, found when a recorder had produced the materials himself he could predict both lexical and structural deletions at about the same rate; when the materials read were produced by another, the reader-predictor could predict structural, but not lexical, words, as well as the producer. Dalrymple (18) found that Arabic-English bilingual subjects did not respond faster to either English or Arabic words presented on cards when they were cued for the appropriate language, that is, knowing before the word was presented whether it would be Arabic or English, than when they were not cued. In an experiment with 150 college students in five experimental treatments, Rothkopf (89) found that test questions over a five-thousand-word written passage had instructive effects regardless of whether adjunct short-answer questions were presented before or after the text segment on which the questions were based, with larger effects obtaining when correct answers were provided after subjects responded.

Three reports were relevant to the area of perception and/or eye movements. (26;60;72) When male Vanderbilt University undergraduates enrolled in introductory psychology courses viewed pairs of visual stimuli (words and objects) for ten seconds each, they did not fixate longer on unpleasant stimuli whether paired with either pleasant or neutral stimuli. (26) Consistent domination (longer total fixation time) of pleasant or neutral stimuli was found as was also a tendency for domination of novel and complex over non-novel and non-complex stimuli. Mehler, Berver, and Carey (72), in their study of effect of phrase structure upon eye fixation patterns in reading, used three corresponding types of ambiguous phrases, each of which could have two interpretations. They interpreted their findings to indicate that surface phrase structure interacts more strongly with visual scanning patterns than does vocabulary, although they were not certain of the nature of the interaction; and they viewed their findings as evidence for the rule, "fixate on the first half of each constituent" (or the surface phrase structure. (72:216) Kirssin and Harcum (60), in a further study relative to lateral dominance, with 13 college students, did not find greater attensity for visual stimuli presented in the visual hemifield opposite that of the dominant hand, as hypothesized by Dallenbach in 1923. They did find that subjects reproduced elements of tachistoscopic patterns to the left of fixation more accurately, which they interpreted as negative evidence for the hypothesis of lateral dominance.

Studying the effect of various factors on improvement of comprehension of time-compressed spoken presentations, another group of investigators (32) found that comprehension of a passage presented at a fast rate (375 words per minute) improved significantly for three groups when the passage was preceded by a summary and short tones were interspersed at crucial points during the presentation; but neither factor improved comprehension relative to a control group. Hopper and Kellar (52) concluded, on the basis of findings obtained in their study carried on with writing classes of various sizes in a Florida junior college, that class size, at levels up to 56 members, is not a critical or crucial variable in effectiveness of teaching writing skills. Thoresen (110) carried on an exploratory study to assist one disadvantaged subject, not considered a college-prospect type by usual criteria, to enter and succeed in the first year of junior college. At the time Thoresen's report was written, the subject had maintained an over-all B-average his first year and was in his second year of college.

A study reported by Thompson and Handy (109) may have implications for college reading improvement programs. They assigned approximately two-hundred University of Oregon counseling center clients to either test-fee or no-test-fee groups. They found no significant differences between the two groups on number of interviews per client, number completing tests, number returning for test interpretation, number who thought tests worthwhile, or other similar factors. They interpreted this as indication that the five-dollar fee was not sufficient to affect the testing-counseling.

MISCELLANEOUS (TESTS, NEWSPAPERS, READABILITY, AND OTHER AREAS)

Newspapers were involved in several other analyses not treated earlier in this review. Among generalizations made by the editors of the *Columbia Journalism Review*, after inspecting seven hundred newspapers which were entries for an annual typography award, were that the American newspaper is unusually serious and sober (even dull), that stodgy nameplates continue to be used by the great bulk of newspapers, that a "surprising amount" of front-page space is devoted to booster material for business groups or for the papers themselves, and that many outside sources are being used by papers without informing readers that opinions are not local. (24) Using a given list of criteria or factors, a panel of twenty-six American international communications professors chose the world's ten leading "quality" newspapers. (74) The final ranking of the top ten, when all criteria were considered, included four American newspapers: *The New York Times* ranked first; *The Christian Science Monitor*, fifth; *The Washington Post*, seventh; and *St. Louis Dispatch*, ninth. *The Times* (London), *The Guardian* (Britain), and the *Neue Zuricher Zeitung* (Switzerland), ranked second, third, and fourth, respectively.

Fang (25) analyzed a sample of news stories with regard to frequency of occurrence of letters. He viewed his analysis as "absurd to give this research significance" (25:762); but results Fang obtained differed from the belief of some length of standing regarding most frequently occurring letters in newspapers. He found these to be **ETAONI RSHDLC**, rather than **ETAOIN SHRDLU**.

Tests were the topic of concern mainly or in part in several studies. (36;62;87;104;124) Goyer (36) described briefly the development of a test, now available in three forms, to measure ability to organize ideas verbally (college level). Lepley (62) gave his relatively new *Synonym Vocabulary Test* to undergraduate and graduate groups in psychology. The two forms, I and III, reportedly differ in "cognitive complexity or flexibility," with Form III being more difficult than Form I. Sussman and McDonald (104) briefly described the development and construction of the *High School Equivalency Diploma Test* which originated during World War II and is now "used widely to measure competencies of high school non-graduates at the high school graduate level." (104:175) Another group of investigators (124), after considering a number of tests in the area of reading, recommended the *Iowa Silent Reading Tests* for use in adult basic education work and studies. Richards (87) reported an experiment carried on by the American College Testing Programs in which a procedure was developed for having a computer write a verbal comprehension test (72-item synonyms test with four alternative responses). The test was administered to entering freshmen at the State University of Iowa, as was also the *Wide Range Vocabulary Test*. The computer-written items were found, on the average, to be easier than the Wide Range items and reliability was lower for the computer test: but the validities were comparable for the two tests and the intercorrelations of the two tests were found "not too far from the limit set by reliability." (87:213)

A detailed presentation of his sub-strata factor theory has been presented by Holmes in several sources (48;49), including at, and in a Yearbook of, this Conference and also at this Conference in 1965. (49) Critiques of Holmes' theory were presented by Wark (118) at the 1965 Conference and by Raygor (85) and Sparks and Mitzel (99) in other sources.

Tinker (112) has presented an extensive annotated bibliography of studies carried on relative to legibility of print. The bibliography includes a number of studies reviewed in earlier annual reviews for this Conference. Coleman and Hahn (15) found in three experiments, two of which involved college students, that conventional horizontal typography was superior to vertical (relative to readability), contrary to findings obtained by Coleman in earlier studies. Szalay (105), in a study of the validity of four Coleman readability formulas designed to predict cloze scores and differing from one another in the increasing number of characteristics considered, found the formulas to be considerably accurate, with the formula which considered one-syllable words to be about as accurate as those involving a multiplicity of factors.

Morton (76) analyzed the content of advertisements in three women's magazines, judged to be reaching the same social level of audience (*Lady's Home Journal*, *McCall's*, and *Good Housekeeping*), during five two-year time periods from 1913 through 1964. She found her analyses reflecting, for all three magazines, a decline in "other-directedness" (efforts to insure conformity by instilling a strong tendency, early in life, to follow an internationalized set of goals), which finding was contrary to a hypothesis set forth by Riesman (in *The Lonely Crowd*, 1950) that it would grow in the 1950 to 1970 period. Olsen (79) referred to a U.S. Office of Education task force team's evaluation of over five-hundred commercially-produced adult instructional materials and their finding these failing to meet, in general, criteria deemed important for adult groups. Among deficiencies found by the team were reading level too hard, general approach too juvenile, basic language and word attack skills needed by functionally illiterate adults not taught, content too pedantic and formal, and little functional integration of skills with other subject matter.

McAnally (67) conducted a study in which mechanical pacers were used in teaching intermediate and advanced college typing. He found, in comparing experimental and control groups, that mean differences were not significant in either gross words or correct words per minute, that mean net words typed per minute and accuracy ratings were significantly higher for the experimental group, that use of the pacer was more beneficial for intermediate than for advanced typing classes, that the main usefulness appeared to be in reducing error rate, with little effect on stroking rates, and that most benefit was obtained by students with initially low typing rates.

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Memorial for the Death of Dr. Jack E. Holmes

The National Reading Conference deeply regrets the death of Dr. Jack A. Holmes on October 19, 1967.

Born in Oakland, California on September 23, 1911, Dr. Holmes received the degrees of B.A. in 1938, the M.A. in 1942, and the Ph.D. in 1948 with Professor Luther Gilbert as his major advisor at the University of California at Berkeley.

Dr. Holmes's professional and academic careers were marked by sustained interdisciplinary thrusts in chemistry, neurology, values and theory building as they related to the psychology of school subjects. At each juncture he reorganized his previous experiences for the next encounter with the "search for the final cause." As he noted once in a letter to a student, "this is the thing that most of us search for most of our lives; that thing is God or Truth—call it what you will. The bigger the truth, or the more inclusive the truth, the closer one approaches the truth of God."

Dr. Holmes began his professional career as a high school chemistry teacher and became head of the Chemistry Department at Petaluma High School, Petaluma, California, between 1942 and 1943.

From 1943-1945 Dr. Holmes was a research physical chemist at the University of California Research Facility at Berkeley and is credited with several discoveries related to the war effort which were classified.

From 1945-1946 he became interested in psychological areas and was Director, Research and Testing Facilities of the Benicia Arsenal, U.S. Army, Benecia, California.

Dr. Holmes's academic career began with an assistant professorship at Oklahoma A and M where he served between 1947-1948.

From 1949-1950 he was Head, College and Adult Division, Reading Improvement Center, Western Reserve University, Cleveland, Ohio.

In the Spring of 1950 he returned to the University of California at Berkeley, where he remained until his demise. At the time of his death, he was Professor of Educational Psychology and Spokesman for the Department of Educational Psychology.

In the field of reading he was probably the foremost theoretician, known most widely for his Substrata-Factor Theory of Reading, which was nascent in his doctoral thesis, "Factors Underlying Major Reading Disabilities at the College Level." His sustained interest in theory building was manifested in 1965 in his article "Basic Assumptions Underlying the Substrata-Factor Theory" which appeared in the first issue of the *Reading Research Quarterly* where he also served on the editorial advisory board. In addition, he was on the Ethics Committee of the International Reading Association and the Advisory Board of the ERIC/CRIER Reading Center at the University of Indiana.

The National Reading Conference was privileged to have him present his paper, "Speed, Comprehension and Power in Reading," which appeared in the Eleventh Yearbook. It was in this paper that he first publicly displayed a diagrammatic model of a working system for power of reading. It reflected his creative reorganization of some insights he had obtained in chemistry some 20 years previous.

In 1965, the National Reading Conference arranged a symposium on the Substrata-Factor Theory of Reading in Dallas. The depth and breadth of the Theory were reflected in such areas as flexibility (Dr. Frank Laycock, Oberlin), concept formation (Dr. Harry Singer, University of California, Riverside), personality (Dr. Irene Athey, University of Rochester), subject-matter relationships (Dr. Martin Kling, Rutgers—The State University), and Dr. Holmes's own reformulation of the Substrata-Factor Theory into a Learning Theory.

Holmes's last two publications were a U.S. Office of Education monograph on *Speed and Power of Reading in High School* with Dr. Harry Singer, published in 1966, and a U.S. Office of Education, Bureau of Research sponsored study, *Reading Success and a Personality Value-Systems Syndrome: A Thirty Year THEN and NOW Study at the Junior High School Level,* with Dr. Irene Athey.

The unifying theme of Dr. Jack Holmes was to achieve excellence in all respects—as a reading clinician, as a classroom teacher, as a researcher, as a human being. Excellence for Professor Holmes encompassed striving for elegance, exploring interdisciplinary relationships and a courageous tenacity in dealing with basal, complex and significant problems.

Through failures and successes, he trained his students in the finest traditions of scholarship, insisting on the highest levels of excellence while maintaining a sense of mutual respect and dignity and an awareness of his students as human beings.